

University of Montana

ScholarWorks at University of Montana

Graduate Student Theses, Dissertations, &
Professional Papers

Graduate School

2013

Household Organization in the Fur Trade Era: Socioeconomic and Spatial Organizations of Housepit 54

Alexandra Christine Williams
The University of Montana

Follow this and additional works at: <https://scholarworks.umt.edu/etd>

Let us know how access to this document benefits you.

Recommended Citation

Williams, Alexandra Christine, "Household Organization in the Fur Trade Era: Socioeconomic and Spatial Organizations of Housepit 54" (2013). *Graduate Student Theses, Dissertations, & Professional Papers*. 527.

<https://scholarworks.umt.edu/etd/527>

This Thesis is brought to you for free and open access by the Graduate School at ScholarWorks at University of Montana. It has been accepted for inclusion in Graduate Student Theses, Dissertations, & Professional Papers by an authorized administrator of ScholarWorks at University of Montana. For more information, please contact scholarworks@mso.umt.edu.

HOUSEHOLD ORGANIZATION IN THE FUR TRADE ERA: SOCIOECONOMIC
AND SPATIAL ORGANIZATIONS OF HOUSEPIT 54

By

Alexandra Christine Williams

B.A., Anthropology, Western Washington University, WA, 2011

Thesis Paper

presented in partial fulfillment of the requirements
for the degree of

Master of Arts
in Anthropology

The University of Montana
Missoula, MT

May 2013

Approved by:

Sandy Ross, Dean of The Graduate School
Graduate School

Dr. Anna Marie Prentiss, Chair
Department of Anthropology

Dr. John Douglas,
Department of Anthropology

David Dyer,
Department of Biology

ABSTRACT

Williams, Alexandra, M.A., May 2013

Anthropology

Household Organization in the Fur Trade Era: Socioeconomic and Spatial Organizations of Housepit 54

Chairperson: Dr. Anna Marie Prentiss

Households are fundamental units of society that possess powerful explanatory potential; however, few studies have approached household organization during the critical contact period within the Mid-Fraser Canyon. The 2012 excavation of Bridge River's Housepit 54 (HP 54) offers a rare opportunity to investigate such socioeconomic relationships and their spatial manifestations. Hypotheses structured with a household archaeology theoretical framework emphasize household socioeconomic strategies. The first hypothesis outlines a network strategy characterized by greater centralization of power, hierarchical complexity, and material-wealth that is reflected in residential units with individual features and disparate accumulations of prestige goods and high utility resources. Such floor plans have been ethnographically observed among the Thompson and Lower Lillooet. The second hypothesis proposes a corporate household strategy that lacks the centralization of power seen within the household in the network strategy. Such a strategy could be reflected by two spatial arrangements: 1) a collectivist approach with multiple residential units that lack significant wealth-based differences and 2) a communalist approach with a central hearth and shared activity areas. Housepits divided by activity areas or "rooms" predicted by the communalist approach have been described in ethnographies of the Shuswap and the Upper Lillooet as well archaeological reports of the Keatley Creek site. To identify HP 54's floor plan, this analysis employs GIS mapping techniques to reveal different distributions and clusters of lithic, historic, and faunal data in relation to features. This thesis will examine the relationship between ethnographic and archaeological records as well as indigenous life during the Fur Trade Era, while also contributing to an enhanced understanding of household relationships.

ACKNOWLEDGMENTS

I would like to thank Dr. Anna Marie Prentiss who invited me to participate in the Bridge River Project and provided infinite support and opportunities to grow. To the Bridge River (Xwisten) Band and the wider Stl'átl'imx Nation, I am grateful for your gracious hospitality and willingness to share your heritage with us through this research. I deeply appreciate the insights and suggestions of my committee members Dr. John Douglas, and David Dyer of the Philip L. Wright Zoological Museum. This thesis relied on the foundation of several laboratory analyses. I would like to thank those that contributed to my research through performing lithic analyses, including Kelly French, Sarah Hocking, and Matthew Mattes. Historic analyses were provided by Dr. Kelly J. Dixon, Dr. Tom A. Foor, C. Riley Augé, and Marry Bobbit. I would like to thank Kristen Barnett and Ayme Swartz for their help in formatting GIS databases. A special thanks to Matthew Nordhagen for his GIS expertise and patience. I am especially grateful for my support network of family and friends. I would like to thank my parents, Wes Williams and Karen Williams-Porec, for fostering a love of learning and an appreciation for other cultures. Finally, I wish to thank Aaron Larson for his endless encouragement and love.

This thesis is dedicated to my grandmother, Anne Williams, from whom I inherited a love of reading and a stubborn refusal to give up.

TABLE OF CONTENTS

Chapter 1. Introduction.....	1
Chapter 2. Environmental and Cultural Background.....	7
The Mid-Fraser Canyon and the Canadian Plateau.....	7
The Canadian Plateau Culture Area.....	11
The Plateau Pithouse Tradition.....	11
Shuswap Horizon.....	12
Plateau Horizon.....	14
Kamloops Horizon.....	16
Fur Trade Era.....	19
The Bridge River Site.....	21
Archaeological Research at the Bridge River Site.....	24
Chapter 3. Pithouses on the Canadian Plateau.....	28
The Evolution of Pithouses.....	28
Ethnographic and Archaeological Evidence of Mid-Fraser Pithouses.....	32
Pithouse Construction.....	33
Pithouse Interiors.....	38
Application in Household Studies.....	43
Chapter 4. Structuring Housepit Research: A Household Archaeology Framework...	45
Development of Household Archaeology.....	45
Defining the Household.....	48
Evolutionary and Human Ecology Approaches.....	50
Structuralist Approaches.....	51
Integrating Approaches.....	52
Household Strategies.....	54
Network.....	55
Corporate.....	57
Articulation with Previous Research.....	60
Chapter 5. Materials and Methods.....	62
Excavating Housepit 54: Field Methods.....	62
Analyzing Housepit 54: Laboratory Methods.....	64
Lithic Assemblage.....	64
Historic Assemblage.....	67
Faunal Assemblage.....	67
Features.....	69
Mapping Housepit 54: Geographic Information Systems Methods.....	70
Lithics.....	71
Historic Artifacts.....	73
Fauna.....	73
Features.....	74
Hypotheses, Expectations, and Testing Methods.....	74

Summary.....	77
Chapter 6. Analysis and Discussion.....	78
Lithic Debitage.....	78
Distribution.....	78
Size Grade.....	79
Locality.....	82
Utility.....	84
Tools and Cores.....	86
Distribution.....	86
Tool Type.....	87
Locality.....	88
Utility.....	90
Curation.....	92
Fire-Cracked Rock.....	93
Heavy Fraction Debitage.....	95
Distribution.....	95
Size Grade.....	96
Historic Artifacts and Prestige Objects.....	98
Fauna.....	99
Distribution.....	99
Size Grade.....	101
Fracture Type.....	104
Burn Stage.....	106
Weathering Stage.....	109
Species Utility.....	111
Element Utility.....	112
Heavy Fraction Fauna.....	114
Distribution.....	114
Size Grade.....	115
Distributions vs. Artifact Clusters.....	116
Debitage Distribution and Tool Types.....	116
Fauna Distributions and Tool Types.....	117
High Utility Fauna and Prestige Items.....	118
Discussion.....	119
Chapter 7. Conclusion.....	124
References Cited.....	129
Appendix A: GIS Methodology.....	143
Appendix B: GIS Maps.....	154

LIST OF FIGURES

Figure 2.1. Map of the Middle Fraser Canyon with the Major Archaeological Sites...	8
Figure 2.2. Map of Bridge River village showing the number and pattern of occupied housepits over time.....	23
Figure 2.3. Stratigraphic Profile of Housepit 54.....	26
Figure 3.1. Housepit Superstructure and Roof.....	34
Figure 3.2. Formation Processes for Pithouses.....	37
Figure 5.1. Excavation of HP 54 During the 2012 Field Season.....	63
Figure 6.1. Debitage Distribution.....	79
Figure 6.2. Debitage Distribution by Size Grade Xsmall.....	81
Figure 6.3. Debitage Distributions by Size Grade Small.....	81
Figure 6.4. Debitage Distribution by Size Grade Medium.....	81
Figure 6.5. Debitage Distribution by Size Grade Large.....	81
Figure 6.6. Debitage Distribution by Size Grade Xlarge.....	82
Figure 6.7. Debitage Distribution by Locality – Local.....	83
Figure 6.8. Debitage Distribution by Locality – Non-local.....	83
Figure 6.9. Debitage Distribution by Locality – Unknown	83
Figure 6.10. Debitage Distribution by Utility – High.....	85
Figure 6.11. Debitage Distribution by Utility – Medium.....	85
Figure 6.12. Debitage Distribution by Utility – Low.....	85
Figure 6.13. Tool and Core Distribution.....	86
Figure 6.14. Tool Distribution by Type.....	87
Figure 6.15. Core Distribution.....	87
Figure 6.16. Tool Distribution by Locality – Local.....	89
Figure 6.17. Tool Distribution by Locality – Non-local.....	89
Figure 6.18. Tool Distribution by Locality – Unknown.....	90
Figure 6.19. Tool Distribution by Utility – High.....	91
Figure 6.20. Tool Distribution by Utility – Medium.....	91
Figure 6.21. Tool Distribution by Utility – Low.....	91
Figure 6.22. Tool Distribution by Curation – Formal.....	92
Figure 6.23. Tool Distribution by Curation – Expedient.....	92
Figure 6.24. Tool Distribution by Curation – Unknown.....	93
Figure 6.25. Fire-Cracked Rock.....	94
Figure 6.26. Heavy Fraction Debitage Distribution.....	96
Figure 6.27. Heavy Fraction Debitage Distribution by Size Grade Xsmall.....	97
Figure 6.28. Heavy Fraction Debitage Distribution by Size Grade Small.....	97
Figure 6.29. Heavy Fraction Debitage Distribution by Size Grade Medium.....	97
Figure 6.30. Prestige and Exotic Item Distribution.....	99
Figure 6.31. Fauna Distribution.....	100
Figure 6.32. Fauna Distribution by Size Grade Xxsmall.....	102
Figure 6.33. Fauna Distribution by Size Grade Xsmall.....	102
Figure 6.34. Fauna Distribution by Size Grade Small.....	102
Figure 6.35. Fauna Distribution by Size Grade Medium.....	102
Figure 6.36. Fauna Distribution by Size Grade Large.....	103

Figure 6.37. Fauna Distribution by Size Grade Xlarge.....	103
Figure 6.38. Fauna Distribution by Size Grade Xxlarge.....	103
Figure 6.39. Fauna Distribution by Fracture Type – Irregular.....	105
Figure 6.40. Fauna Distribution by Fracture Type – Oblique.....	105
Figure 6.41. Fauna Distribution by Fracture Type – Spiral.....	105
Figure 6.42. Fauna Distribution by Fracture Type – Transverse.....	105
Figure 6.43. Fauna Distribution by Fracture Type – Complete.....	106
Figure 6.44. Fauna Distribution by Burn Stage – Non-burnt.....	107
Figure 6.45. Fauna Distribution by Burn Stage – Brown.....	107
Figure 6.46. Fauna Distribution by Burn Stage – Brown/black.....	107
Figure 6.47. Fauna Distribution by Burn Stage – Black.....	107
Figure 6.48. Fauna Distribution by Burn Stage – Blue/gray.....	108
Figure 6.49. Fauna Distribution by Burn Stage – Gray.....	108
Figure 6.50. Fauna Distribution by Burn Stage – White.....	109
Figure 6.51. Fauna Distribution by Weathering Stage 2.....	110
Figure 6.52. Fauna Distribution by Weathering Stage 3.....	110
Figure 6.53. Fauna Distribution by Weathering Stage 4.....	110
Figure 6.54. Fauna Distribution by Species Utility – High.....	111
Figure 6.55. Fauna Distribution by Species Utility – Medium.....	111
Figure 6.56. Fauna Distribution by Species Utility – Low.....	112
Figure 6.57. Fauna Distribution by Element Utility – High.....	113
Figure 6.58. Fauna Distribution by Element Utility – Medium.....	113
Figure 6.59. Fauna Distribution by Element Utility – Low.....	113
Figure 6.60. Heavy Fraction Fauna Distribution.....	114
Figure 6.61. Heavy Fraction Fauna Distribution by Size Grade Xxsmall.....	115
Figure 6.62. Heavy Fraction Fauna Distribution by Size Grade Xsmall.....	115
Figure 6.63. Heavy Fraction Fauna Distribution by Size Grade Small.....	116
Figure 6.64. Tools vs. Debitage Distribution.....	118
Figure 6.65. Tools vs. Fauna Distribution.....	118
Figure 6.66. High Utility Faunal Species vs. Prestige Items.....	118
Figure 6.67. High Utility Faunal vs. Prestige Items.....	118
Figure 6.68. Depositional Patterns.....	120
Figure 6.69. Activity Areas.....	120
Figure A.1. HP 54 Grid.....	143
Figure B.1. Feature Distribution.....	154
Figure B.2. Debitage Distribution.....	155
Figure B.3. Debitage Distribution by Size Grade Xsmall.....	156
Figure B.4. Debitage Distributions by Size Grade Small.....	157
Figure B.5. Debitage Distribution by Size Grade Medium.....	158
Figure B.6. Debitage Distribution by Size Grade Large.....	159
Figure B.7. Debitage Distribution by Size Grade Xlarge.....	160
Figure B.8. Debitage Distribution by Locality – Local.....	161
Figure B.9. Debitage Distribution by Locality – Non-local.....	162
Figure B.10. Debitage Distribution by Locality – Unknown	163
Figure B.11. Debitage Distribution by Utility – High.....	164
Figure B.12. Debitage Distribution by Utility – Medium.....	165

Figure B.13 Debitage Distribution by Utility – Low.....	166
Figure B.14. Tool Distribution.....	167
Figure B.15 Tool Distribution by Type.....	168
Figure B.16. Core Distribution.....	169
Figure B.17. Tool Distribution by Locality – Local.....	170
Figure B.18. Tool Distribution by Locality – Non-local.....	171
Figure B.19. Tool Distribution by Locality – Unknown.....	172
Figure B.20. Tool Distribution by Utility – High.....	173
Figure B.21. Tool Distribution by Utility – Medium.....	174
Figure B.22. Tool Distribution by Utility – Low.....	175
Figure B.23. Tool Distribution by Curation – Formal.....	176
Figure B.24. Tool Distribution by Curation – Expedient.....	177
Figure B.25. Tool Distribution by Curation – Unknown.....	178
Figure B.26. Fire-Cracked Rock.....	179
Figure B.27. Heavy Fraction Debitage Distribution.....	180
Figure B.28. Heavy Fraction Debitage Distribution by Size Grade Xsmall.....	181
Figure B.29. Heavy Fraction Debitage Distribution by Size Grade Small.....	182
Figure B.30. Heavy Fraction Debitage Distribution by Size Grade Medium.....	183
Figure B.31. Prestige and Exotic Item Distribution.....	184
Figure B.32. Fauna Distribution.....	185
Figure B.33. Fauna Distribution by Size Grade Xxsmall.....	186
Figure B.34. Fauna Distribution by Size Grade Xsmall.....	187
Figure B.35. Fauna Distribution by Size Grade Small.....	188
Figure B.36. Fauna Distribution by Size Grade Medium.....	189
Figure B.37. Fauna Distribution by Size Grade Large.....	190
Figure B.38. Fauna Distribution by Size Grade Xlarge.....	191
Figure B.39. Fauna Distribution by Size Grade Xxlarge.....	192
Figure B.40. Fauna Distribution by Fracture Type – Irregular.....	193
Figure B.41. Fauna Distribution by Fracture Type – Oblique.....	194
Figure B.42. Fauna Distribution by Fracture Type – Spiral.....	195
Figure B.43. Fauna Distribution by Fracture Type – Transverse.....	196
Figure B.44. Fauna Distribution by Fracture Type – Complete.....	197
Figure B.45. Fauna Distribution by Burn Stage – Non-Burnt.....	198
Figure B.46. Fauna Distribution by Burn Stage – Brown.....	199
Figure B.47. Fauna Distribution by Burn Stage – Brown/black.....	200
Figure B.48. Fauna Distribution by Burn Stage – Black.....	201
Figure B.49. Fauna Distribution by Burn Stage – Blue/gray.....	202
Figure B.50. Fauna Distribution by Burn Stage – Gray.....	203
Figure B.51. Fauna Distribution by Burn Stage – White.....	204
Figure B.52. Fauna Distribution by Weathering Stage 2.....	205
Figure B.53. Fauna Distribution by Weathering Stage 3.....	206
Figure B.54. Fauna Distribution by Weathering Stage 4.....	207
Figure B.55. Fauna Distribution by Species Utility – High.....	208
Figure B.56. Fauna Distribution by Species Utility – Medium.....	209
Figure B.57. Fauna Distribution by Species Utility – Low.....	210
Figure B.58. Fauna Distribution by Element Utility – High.....	211

Figure B.59. Fauna Distribution by Element Utility – Medium.....	212
Figure B.60. Fauna Distribution by Element Utility – Low.....	213
Figure B.61. Heavy Fraction Fauna Distribution.....	214
Figure B.62. Heavy Fraction Fauna Distribution by Size Grade Xxsmall.....	215
Figure B.63. Heavy Fraction Fauna Distribution by Size Grade Xsmall.....	216
Figure B.64. Heavy Fraction Fauna Distribution by Size Grade Small.....	217
Figure B.65. Tools vs. Debitage Distribution.....	218
Figure B.66. Tools vs. Fauna Distribution.....	219
Figure B.67. High Utility Faunal Species vs. Prestige Items.....	220
Figure B.68. High Utility Faunal vs. Prestige Items.....	221
Figure B.69. Activity Areas.....	222
Figure B.70. Depositional Patterns.....	223

LIST OF TABLES

Table 5.1. Housepit 54 Lithic Tools and Debitage.....	64
Table 5.2. Housepit 54 Fauna by Taxon.....	68
Table 5.3. Housepit 54 Features.....	69
Table 5.4. Hypotheses and Expectations.....	75
Table A.1. Debitage Flake Type.....	144
Table A.2. Artifact Type.....	144
Table A.3. Expediency vs. Curation.....	145
Table A.4. Lithic Material Type.....	145
Table A.5. Local vs. Non-Local Materials.....	146
Table A.6. Material Utility.....	147
Table A.7. Lithic Debitage Size Grade.....	147
Table A.8. Historic Artifact Type.....	148
Table A.9. Historic Artifact Material Type.....	148
Table A.10. Bead Design.....	148
Table A.11. Bead Opacity.....	148
Table A.12. Bead Color.....	148
Table A.13. Species and Species Utility.....	149
Table A.14. Faunal Element.....	150
Table A.15. Element Utility.....	151
Table A.16 Faunal Size Grade.....	152
Table A.17. Fracture Pattern.....	152
Table A.18. Burn Stages.....	152
Table A.19. Weathering Stages.....	152
Table A.20. Modifications.....	153
Table A.21. Faunal Artifacts.....	153

CHAPTER 1 INTRODUCTION

As links between micro and macro social processes, households are fundamental units of society that yield powerful analytic potential. They have an emergent character that makes them more than the sum of their parts; they are the primary arena for the expression of gender roles, kinship, socialization, where culture is mediated and transformed into behavior. Households, however, are ethnographic phenomenon, not archaeological ones. While households live in and use material culture, Wilk and Rathje (1982) remind us that archaeologists excavate dwellings and domestic artifacts, not socioeconomic units. This thesis utilizes such archaeological material to assess household socioeconomic relationships within Housepit 54 (HP 54), a semi-subterranean structure at the Bridge River site located in the Mid-Fraser Region, in terms of corporate or network strategies.

This research contributes to the larger Bridge River project conducted by Dr. Anna Prentiss in collaboration with the Bridge River Band (Xwisten). While the primary goal of this project is to test two different models of Mid-Fraser housepit village evolution and organization associated with the Classic Lillooet period, the final occupation of HP 54 presents an opportunity to study St'át'imc people during the Fur Trade period. Aboriginal sites of the historic period have been largely overlooked due to a Eurocentric paradigm of historical archaeology that was little concerned with the role of Native culture in the fur trade (Carlson 2000). This separation of historic and prehistoric archaeology has created theoretical and methodological barriers hindering the study of Native cultures at historic sites (Carlson 2000, 2006). Existing indigenous archaeology of this era usually emphasizes process of acculturation or transculturation (Klimko 2004);

however, a recent trend has begun to recognize resistance and the incorporation of material items as an adaptive strategy. Unlike static perspectives promoting the concept of pristine cultures, these scholars appreciate that Native peoples used material objects, cultural practices, and a creative reworking of ideas to maintain ethnic identities. In some instances the fur trade increased the already inherent tendencies toward inequality through new opportunities to seize and transfer surpluses previously unavailable in the traditional social order (Acheson and Delgado 2004). Thus the presence of historic artifacts within indigenous contexts is crucial for understanding aspects of socioeconomy.

In focusing on the Native culture in the Fur Trade Era, this thesis also allows a greater examination of the relationship between ethnographic and archaeological records. While archaeologists study the cultural remnants of occupations and activities, ethnographers can capture these processes more dynamically through observation and interviews. However, ethnographic information can also be limited. Early accounts of pithouses were based on interviews with few informants, resulting in idealized descriptions that ignored variability and aspects of daily life (Alexander 2000). Concerned with the threat of indigenous cultural extinction, ethnographers emphasized recording “pristine traditional cultures” and thus ignored process of cultural change and adaptation. The archaeological record can supplement or contradict these accounts to create a more accurate and complete view of housepit occupation (Alexander 2000; Carlson 2006; MacDonald 2000a).

The use of HP 54 as an analytical unit contributes to the regional study of household archaeology. Because greater emphasis has centered on understanding village-wide evolutionary trends, few studies in the Mid-Fraser Region have excavated housepits

entirely (Hayden 2000a, 2000b; Prentiss et al. 2009, 2010), limiting the understanding of households. The more detailed study of HP 54 made possible by the 2012 Bridge River excavations reveals the household strategy employed and the presence of intrahousehold ranking. For this analysis, I draw on both evolutionary and structuralist approaches of household archaeology to define the *household* as a morphological and functional concept. While these definitions stem from different approaches, they may be integrated to provide a more comprehensive perspective (Ames 2006; Gahr et al. 2006). Households and their adaptive strategies are linked with larger scale socioeconomic and ecological processes. Their relationships are manifested physically in the spatial organization of the dwelling; therefore the densities and clusters of artifacts in relation to features may reveal aspects of household production, distribution, transmission, and reproduction that correlate with broader patterns.

The hypotheses explained here emphasize network or corporate household strategies and their physical manifestations within HP 54. These strategies describe how socioeconomic standing is achieved and maintained. Although there are many types of wealth, this research utilizes the definition of material wealth, consisting of land, food resources, household possessions, and items of adornment or jewelry that may be acquired through individual or group achievements or inheritance (Prentiss, Foor, et al. 2012). In the network strategy power is focused on individuals and their personal networks. Here, greater centralization of power is associated with hierarchical complexity and wealth distinctions (Blanton et al. 1996; Feinman 2000; Hayden 1997). The spatial manifestation of this strategy is seen with multiple residential units consisting of individual hearths, cache pits, and artifact distributions coinciding with each family group

(Hayden 2000; Samuels 1989, 2006). Intrahousehold ranking is evidenced by differential resource access seen in artifact and fauna distributions. Though marked by differential wealth and ranking, the corporate strategy lacks the centralization seen in the network mode (Feinman 2000). This could translate as the presence of interhousehold inequality and greater intrahousehold communalism. Such a strategy could be reflected by two housepit spatial arrangements: 1) a collectivist approach with multiple residential units that lack significant wealth-based differences and 2) a communalist approach with a central hearth and shared activity areas (Alexander 2000; Coupland et al. 2009; Hayden 1997). Recognizing these strategies and their spatial signatures is crucial for understanding intrahousehold relationships and ranking.

This thesis is organized into seven chapters. Chapter 2 introduces the environmental and cultural context of the Middle Fraser region of the Canadian Plateau. It outlines the major cultural trends and environmental factors associated with the Plateau Pithouse Tradition that led to the temporal focus of this study, the Fur Trade Era. Additionally it describes the Bridge River site and the archaeological research conducted by The University of Montana that has occurred there.

Chapter 3 provides an in-depth examination of pithouses on the Canadian Plateau. The evolution of these dwellings is tracked in relation to changes in seasonal subsistence strategies, resource intensification, and demographic growth. A discussion of pithouse morphology combining ethnographic and archaeological evidence follows, emphasizing pithouse construction, interior spatial organization, and the major taphonomic processes affecting assemblages.

The household archaeology theoretical framework is introduced in Chapter 4. This chapter describes the significant developments of the theory from the initial disinterest in households as analytical units to the modern paradigms that have embraced the concept. In defining the household, I have highlighted structuralist and evolutionary approaches to show that the *House* and the *household* are not mutually exclusive. Variations in socioeconomic relationships within the household are discussed through network or corporate strategies. To develop a frame of reference, I examine their manifestations in ethnographic descriptions of housepit floor plans.

Chapter 5 outlines the materials and methods utilized in this research. Important aspects of the field methods, including spatial designations, artifact and specimen collection, and mapping protocol, are described to provide a better understanding of how later methodological decisions were made. The lithic, historical, faunal, and feature analyses that contributed data to this research are also discussed. Geographical Information Systems (GIS) mapping was performed to identify the physical manifestation of the network or corporate socioeconomic strategies. This required the formation of several databases drawing from initial laboratory analyses. GIS queries were developed to ascertain possible boundaries between residential units or activity areas through emphasizing artifact densities and clusters in relation to features.

Chapter 6 presents the results of the GIS analyses by data type. Discussions emphasize material distributions and clusters in relation to features to identify residential units or activity areas. A summary of how these data relate to ethnographic and archaeological descriptions leads to the conclusion that HP 54 was organized by shared

activity areas corresponding to a more communal mode of a corporate household strategy.

Chapter 7 provides a conclusion summarizing the hypotheses and results. Additionally it will discuss the contributions of this research to debates on household archaeology, the relationship between ethnographic and archaeological records, and Fur Trade Era archaeology.

CHAPTER 2: ENVIRONMENTAL AND CULTURAL BACKGROUND

The Mid-Fraser Canyon and the Canadian Plateau

The Mid-Fraser Canyon encompasses the Fraser River and its flood plains, the adjacent talus slopes and terraces, and peripheral mountains and high valleys (Figure 2.1) (Prentiss and Kuijt 2012). It is situated within the larger geographic area of the Canadian Plateau. Also known as the Northern or Interior Plateau, it is a vast geographic area within south central British Columbia that is renowned for extremes in geology and climate, which greatly affect the regional ecology. While the southern extent of this region lies 80 kilometers north of the United States-Canada border, the bend of the Fraser River marks its northern limit (Hayden 1997; Richards and Rousseau 1987). Bounded by the Coast and Cascade Mountain Ranges to the west and the Rocky Mountains to the east, the expanse between these peaks was wrought by tectonic, glacial, and fluvial processes spanning many millions of years to millenniums ago (Chatters 1998; Hayden 1997).

The complex geologic history of the region has created a mosaic of metamorphic, igneous, and sedimentary materials. The collision of the North American Continental Plate into the Wrangellia Terrane created the metamorphosed granitic rock of the Coast Range Mountains that have in turn contributed overlaying volcanic deposits. The western portion of the Fraser River Valley consists of the oceanic sedimentary deposits of the North American Plate that have been shaped by the north-south running Fraser and Yalakom Faults (Carlson 2010). Retreating Pleistocene glaciers gouged U-shaped valleys and deposited glacial till, choking river valleys (Austin 2007; Carlson 1996; Hayden

1997). Subsequent fluvial action carved through the glacial detritus to create sharply shorn canyon walls and gently sloping river terraces (Chatters 1998).

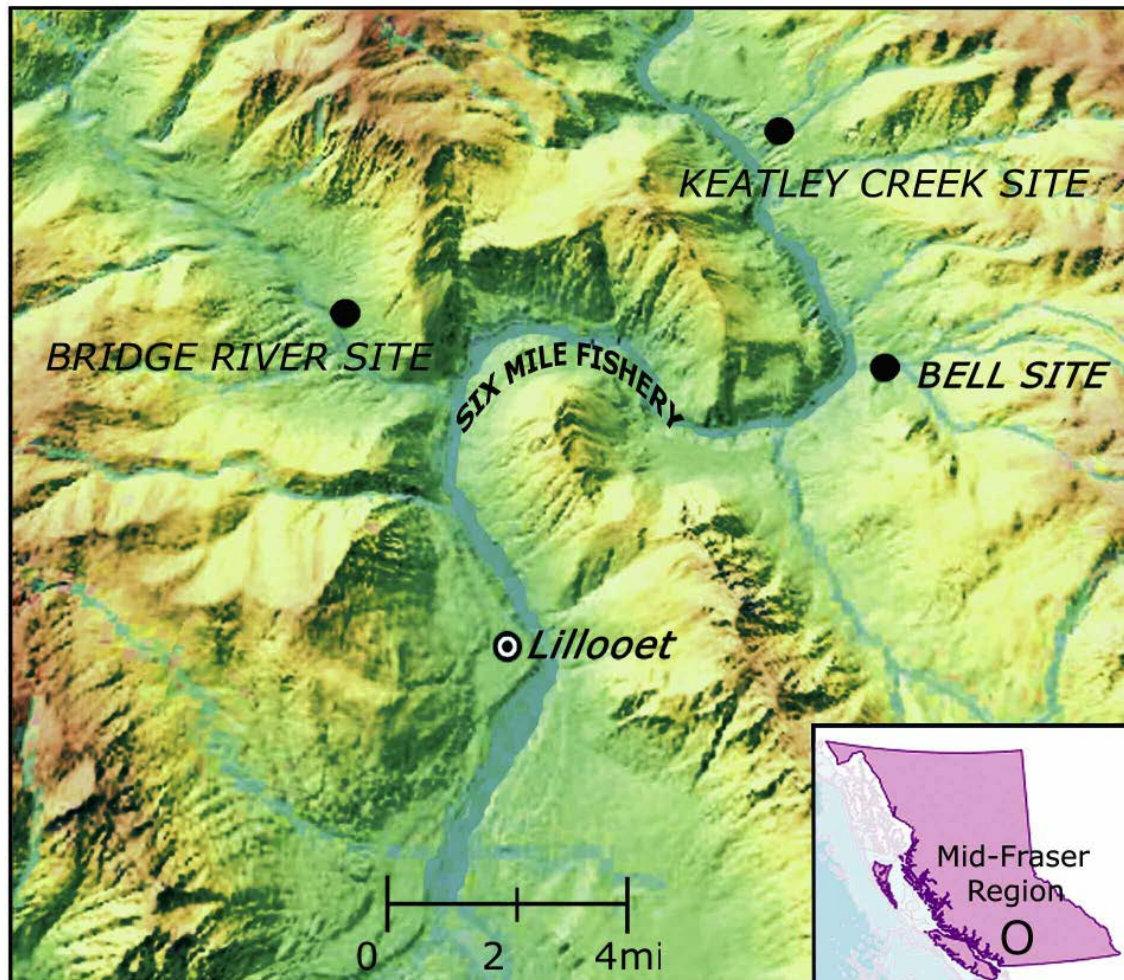


Figure 2.1. Map of the Middle Fraser Canyon with the major archaeological sites, map by Michael Wanzenried (Prentiss, Foor, et al. 2012: 4).

Climatically, the region is characterized by further extremes. The area is semi-arid due to the rain shadow effect created by the Coast and Cascade Mountain Ranges. While the windward region receives an annual average of 150-250 centimeters of precipitation, the lee side averages only 25-30 centimeters (Chatters 1998; Prentiss, Carlson, et al. 2009). Most of this precipitation falls as snow during the winter in higher elevations and

melts in the spring and summer seasons to fill south- and east-flowing streams articulating to the westward draining Fraser River. Average temperatures in the region range from 32°C during the summer and -6°C in the winter. However, extreme temperatures have also been recorded with respective 42°C and -52°C during the summer and winter seasons.

The dynamic geologic history and climate of the Mid-Fraser Canyon and the larger Canadian Plateau greatly affect regional ecology. An ecologically complex area, it contains sharply demarcated biogeoclimatic units, including alpine, montane parkland, montane forests, intermediate grasslands, intermediate lakes, river terraces, and river valleys (Hayden 1992; Alexander 1992a, 1992b). Changes in elevation across these settings create significant differences in climate and soils, thus affecting available vegetation and fauna throughout the year.

Sparse alpine and montane parkland vegetation, which includes spring beauty corms, avalanche lily bulbs, dwarf mountain blueberry, tiger lily, nodding onion, balsamroot, cow parsnip, Indian celery, whitebark pine nutlets, and soap berries, transitions into continuous canopy forests of the Engelmann Spruce-Subalpine Fir and Interior Douglas Fir Zones within the montane forest environment. Intermediate grasslands consist of various grasses, spring beauty, balsamroot, nodding onion, fireweed, strawberry, Solomon's seal, and cow parsnip, though deciduous trees such as aspen, cottonwood, Douglas maple, paper birch, and scrub birch occur along streams and grassland edges. With similar temperatures and amounts of precipitation as those of intermediate grasslands and lower montane forests, intermediate lakes are surrounded by Douglas fir, a variety of deciduous trees, soapberries, Saskatoon berries, nodding onion,

balsamroot, blackcap, and Oregon grape. River terrace settings, which are the driest and contain the highest summer temperatures, are vegetated primarily with Ponderosa pine, big sagebrush, and bunch grass though several food plants are also available, such as mariposa lily, desert parsley, and prickly-pear cactus. River valleys provide similar vegetation seen in river terrace settings.

Many fauna transition between these biogeoclimatic zones throughout the annual cycle as a combination of topography and climate affect available vegetation (Alexander 1992a). Ungulates, such as moose, elk, white-tailed deer, mule deer, bighorn sheep, mountain goat, and pronghorn, migrate from alpine settings to montane forests and intermediate grasslands in the winter seasons. Other mammals, such as grizzly and black bears, wolves, coyotes, martens, fishers, wolverines, smaller weasels, beavers, porcupines, rabbits, shrews, voles, squirrels, and several variety of mice, may be present throughout these environments. Numerous species of birds are also present, including several varieties of grouse, waterfowl, and raptors (Alexander 1992a, 1992b; Cail 2011). Trout are present year round in intermediate lakes, and spawning trout were available in inlet and outlet streams in late May. More restricted in their environmental setting, several varieties of invertebrates, such as mollusks and crustaceans, inhabit streams. The Fraser River is one of the most productive salmon rivers in the world (Lepofsky et al. 2009). Four species have been recorded within the region: chinook salmon in the spring, sockeye salmon in the mid to late summer, pink salmon in the early fall, and coho salmon in the late fall (Alexander 1992b; Berry 2000; Prentiss and Kuijt 2012). Although pink salmon rarely pass Six-Mile Rapids, the other species pass through the Mid-Fraser Canyon during their spawning seasons.

The Canadian Plateau Culture Area

The Plateau Culture Area is renowned for its rich hunter-gatherer economy dominated by salmon and intricate network of socioeconomic relationships on levels from the household to the region. This area included the Sahaptian, Interior Salish, Kutenai, Chinook, and Athapaskan speaking peoples (Carlson 1996; Prentiss et al. 2009, 2010). Inhabitants of the Mid-Fraser Canyon belonged to the Interior Salish linguistic group. Three First Nation groups have inhabited this region ethnographically and contemporarily: the St'atlimc, or Fraser River Lillooet Indians; the Nlaka7pamux, or Upper Thompson Indians; and the Secwepemc, or Shuswap Indians (Morin et al. 2009; Prentiss et al. 2009, 2010). Much of our understanding of these peoples stems from twentieth century ethnographies, especially those of Teit (1900, 1906, 1909). Although small variations between these peoples are apparent in the ethnographic record, overall they are united by similarities in material culture, subsistence and settlement strategies, and ritual traditions.

The Plateau Pithouse Tradition

The Canadian Plateau is characterized by 10,000 years of unique hunter-gatherer cultures that experienced numerous environmental changes and the development or adoption of successful technological, subsistence, and settlement strategies (Rousseau 2004). While the period from 10,000 to 7,000 B.P. is still poorly understood, two broad traditions, the Nesikep Tradition and the Plateau Pithouse Tradition, cover the significant paleoenvironmental conditions and cultural developments from 7,000 B.P. to the period before the Fur Trade Era (Stryd and Rousseau 1996; Rousseau 2004). The Nesikep

Tradition (ca. 7,000-4,500 B.P.) is divided into Early Nesikep (ca. 7,000-6,000 B.P.), the Lochnore Phase (ca. 6,500-4,000 B.P.), and the Lehman Phase (ca. 6,000-4,500 B.P.) (Prentiss and Kuijt 2004; Prentiss and Kuijt 2012; Rousseau 2004). The Nesikep Tradition is typified by low collector/logistical organization, high residential mobility and low population density. The end of the tradition, however, witnessed decreasing residential group mobility although it still lacked resource intensification and food storage. The Plateau Pithouse Tradition (ca. 4,500-200 B.P.), which includes the Shuswap Horizon (ca. 3,500-2,400 B.P.), Plateau Horizon (ca. 2,400-1,200 B.P.), and the Kamloops Horizon (ca. 1,200-200 B.P.), is a dynamic period that evidences stages of relative adaptive stability punctuated by rapid change. The tradition is characterized by the use of semi-subterranean pithouses as winter dwellings in semi-permanent villages; a semi-sedentary, logistically organized, seasonally regulated subsistence and settlement strategy; and a hunting and gathering subsistence strategy with a strong focus on salmon and food storage. Such patterns are generally similar to those described in the notable ethnographies of Teit (1900, 1906, 1909).

Shuswap Horizon (ca. 3,500-2,400 B.P.)

The Shuswap Horizon began when the cool and wet conditions were at their maximum, enhancing habitats for both salmon and forest-dwelling flora and fauna (Carlson 1996; Chatters 1998; Rousseau 2004). Large ungulates, however, were limited to grazing in river valleys and their tributaries as grasslands shrank. This period observes the rapid shift from the moderately mobile, seasonally sedentary foraging and collecting strategy to a more logistically organized collector adaptation with food storage and winter settlements, creating the first major distributions of pithouse communities in the region

(Carlson 2010; Prentiss and Kuijt 2012; Rousseau 2004). Most of these sites occur in main valleys bottoms or their tributaries near rivers, streams, and large lakes. Low regional populations suggest that formal elite or corporate group behavior did not exist during this horizon.

The diet breadth was broad, including deer, elk, black bear, sheep, muskrat, beaver, snowshoe hare, red fox, birds, fresh water mussels, trout and salmon, and trumpeter swan (Carlson 2010; Rousseau 2004). While salmon procurement became more significant during this period, it did not become the primary dietary resource until later in the Plateau Pithouse Tradition. Food storage is evident with the presence of internal cache pits (Stryd and Rousseau 1996); however, such precautions may not have been necessary as serious unexpected food depletions could have been offset by moving to another resource-rich area in this “time of plenty” (Rousseau 2004).

Several shifts in the organization of the lithic technology indicate that while adaptations to new settlement patterns occurred the fully developed lithic strategy oriented toward greater sedentism seen in later horizons had not yet appeared. Less curation of lithic tools and materials is observed during this horizon, causing a greater reliance on medium to low quality lithic raw materials found near winter villages and field camps (Prentiss et al. 2009, 2010; Rousseau 2004). Lithic quality and less complex technological sophistication resulted in the overall crude appearance of the lithic artifacts. However, finely made tools of dacite, jasper, and chalcedony also occur in this horizon as seen with Shuswap projectile points. These points share similarities with those of the Northern Plains and the coastal regions, suggesting contact existed between these regions. The assemblage predominantly consists of expediently made key-shaped

unifaces and bifaces, unformed unifacial and bifacial tools, retouched flake tools, microblades, and cores (Rousseau 2004). Groundstone artifacts, formal scrapers, and artwork, which require more time to produce, occur very rarely. A well-developed antler and bone technology exists and includes many artifacts observed in the Lochnore Phase. The presence of dentalium shells indicates trade with the coastal region continued (Strydom and Rousseau 1996).

Plateau Horizon (ca. 2,400-1,200 B.P.)

The onset of the Plateau Horizon begins with a climatic shift from the cool and moist conditions of the Shuswap Horizon to the warmer and dryer conditions that are still present today. Major and rapid changes in material culture and subsistence and settlement strategies also mark the phase. The horizon transitions from a Classic Collector strategy to a Complex Collector strategy that was more logistical than both the preceding and following horizons (Kuijt and Prentiss 2004; Prentiss et al. 2005; Rousseau 2004). Winter village sizes increased as they became continuously occupied over longer periods of time, resulting in low residential mobility. However, with the exception of Mid-Fraser structures, regional pithouse diameter averages actually decrease during this time, suggesting changing household organization. The organization of small, medium, and large pithouses into communities arises in the “Big Village Pattern” around ca. 1800-1600 cal. B.P. While villages were nestled in resource-rich areas near major salmon fisheries and locations where significant vegetation resources were abundant, small field camps were located in mid- and upland environments.

The diet breadth was relatively narrow with a primary focus on salmonids and roots (Prentiss et al. 2007). Stable carbon isotope analysis of human bone reveals that

60% of all dietary protein had a marine origin. Terrestrial prey, especially ungulates, continued to be a supplementary resource, especially as the adoption of bow and arrow technology led to a major reorganization of hunting strategies that lessened the time required for successful hunts (Rousseau 2004). The occurrence of these prey in patchy environments led to the formation of larger cooperative groups linked by kinship ties that could pursue various resources simultaneously (Prentiss and Kuijt 2012).

The presence of task-specific items, like digging stick handles, key-shaped unifaces, bifacial tools, and unifacial scraping tools, reveal curation behavior, which is considered a critical component of logistically organized collector subsistence strategies. Greater proficiency in lithic reduction and tool production techniques is reflected with well-formed bifaces and projectile points that are typically barbed with corner or basal notches and convex bases (Prentiss et al. 2009, 2010; Rousseau 2004). Although both dart-sized and smaller projectile points are present, small points were not introduced until after the adoption of the bow and arrow. Chipped stone technology continues to dominate assemblages while incised and groundstone tools are relatively rare. Although present in previous horizons, bone tools, such as a variety of harpoons, bone points, beads, and gaming pieces, became more common.

During this horizon art, ceremonialism, social elaboration, and trade increased due to the social payoffs of signaling; together these components mark the height of social complexity in the region (Rousseau 2004). The Plateau Interaction Sphere (PIS) (Hayden and Schulting 1997), an inter-regional trade network, emerges at the horizon's commencement. The presence of non-local trade and prestige goods, including nephrite, argillite, top of the world chert, and Dentalium and Olivella shells, reflect relationships

between the Plateau, the Northern Plains, the Eastern Kootenay, and Rocky Mountain regions. The nature of this interaction is debated. While Hayden and Schulting (1997) contend that it is the result of enterprising elites attempting to advance their own self-interest, Rousseau (2004) argues that the PIS developed out of a conscious collective need to establish and maintain interregional movement of vital food and raw materials resources. In either instance the exchange network provided a means of supporting and perpetuating an elite class, thus contributing to the emergence of material wealth-based inequality and growing complexity observed after 1,300 B.P. (Prentiss et al. 2007, 2011; Prentiss, Foor, et al. 2012). The ownership of hunting territories and fishing locations developed due to patchy resources, creating an additional means of status differentiation (Hayden 1997; Prentiss et al. 2007). Although present throughout the region in the prior horizon, domestic dogs became a greater status symbol (Crellin and Heffner 2000). While providing protection, labor, and companionship, dogs also served important roles as prestige markers and feasting food (Cail 2011).

Kamloops Horizon (ca. 1,200-200 B.P)

The Kamloops Horizon marks the last prehistoric cultural phase in the Canadian Plateau region. Although there are strong continuities from the previous phase, marked differences develop. The seasonal occupation of medium and large pithouse villages continues, but structure diameters return to the larger sizes first seen in the Shuswap Horizon and display a wider array of interior uses of space (Rousseau 2004), reflecting different socioeconomic organizations. The highly logistical organized subsistence strategy persists though it appears less logistically organized than the preceding Plateau Horizon with decreased task-specific trips into mid- and upland areas to harvest floral,

faunal, and lithic resources (Rousseau 2004). Despite this, matlodge structures, frameworks of poles covered with mats or bark that were utilized in the earlier horizons, become more visible in the archaeological record (Rousseau 2004; Teit 1900).

Subsistence strategies continued emphasizing salmon as the dietary staple. Stable isotope analysis results indicate that 40-60% of the dietary caloric intake was from such aquatic resources (Lepofsky et al. 1996). However, climatic warming led to a critical decline of salmon availability requiring a greater dependence on terrestrial prey (Prentiss et al. 2007). Bow and arrow technology enabled the pursuit of previously unattainable protein sources, including deer, birds, hare, and other small animals, which would have been available in river terrace and valley biogeoclimatic zones. Such availability may have lessened the reliance of upland resources. Despite this decline in upland resource exploitation, resources such as deer, roots, and berries still supplemented the diet (Prentiss and Kuijt 2012).

Technological developments include the appearance and persistence of the Kamloops projectile points. Small and triangular in shape, they have narrow side notches and straight to slightly convex or concave basal margins (Prentiss et al. 2009, 2010; Rousseau 2004). Other lithics consist of fine, pressure-flaked bifacial points and knives, scrapers, gravers, and perforators. A greater amount of ground nephrite, slate, and steatite artifacts reflect access to higher quality raw materials (Austin 2007; Prentiss et al. 2009, 2010). Such artifacts include anthropomorphic and zoomorphic forms, which often served as trade goods in the PIS, represent a greater degree of workmanship and craft specialization (Hayden 1997; Rousseau 2004). A variety of non-lithic artifacts are also associated with Kamloops Horizon assemblages, including birch bark containers and

woven baskets as well as antler, bone, and tooth artifacts (Teit 1900, 1906, 1909). Many artifacts made from these faunal materials contain incised geometric patterns (Prentiss et al. 2009, 2010; Rousseau 2004).

Population densities were highest at transition from the Plateau to the Kamloops Horizon, ca. 1,300-1,200 B.P. However, after this peak there was a steady decline in regional population densities, seen with the collapse of major villages and a reduction of smaller site types (Prentiss and Kuijt 2012). This “cultural collapse” occurred between 1,100 and 800 B.P., affecting villages differentially; the Bridge River village experienced the first abandonment, followed by the Seton Lake, Fountain, Bell, and Keatley Creek sites. Contention over the origin of these declines has centered on the role of ecological factors such as demographic growth, climatic fluctuations, resource stress, and even natural disasters (Hayden 2005; Hayden and Ryder 1991; Prentiss et al. 2007, 2011). Hayden (1997, 2005) attributes the regional cultural collapse to the Texas Creek landslide blocking salmon runs. The exploitation of upland resources, primarily roots and deer, has also been cited as causal (Rousseau 2004). Kuijt and Prentiss (2004) and Prentiss et al. (2007) emphasize subsistence stress due to climatic warming affecting vital salmon resources. After this regional depopulation the villages remained largely abandoned for several hundred years. The final centuries of the horizon underwent a reoccupation of some villages, though on a smaller scale (Prentiss and Kuijt 2012). The closing of the Kamloops Horizon coincides with the arrival of Euro-Americans in the region 200 years ago.

Fur Trade Era (200 B.P.- Present)

The first contact between indigenous and European populations in British Columbia occurred in 1774 when the Spanish voyager Juan Pérez met a group of Haida of Langara Island (Fisher 1996). While this initial encounter was a fleeting one, it foreshadowed a complex history of interactions between First Nations and Euro-Americans spanning over two centuries. Contact continued under Captain James Cook, an English navigator who opened trade relationships with the Nootka. One notable trade item was the sea otter pelt. After an account of Cook's voyages was published, the Euro-American public became aware of the lucrative commercial opportunity of maritime fur trading (Acheson and Delgado 2004; Fisher 1997). By the early 1790s a score of vessels were situated along the coast during the summer trading season. By the 1820s the maritime fur trade collapsed due to the near eradication of the sea otter; however, the fur trade persisted, with a greater emphasis on interior resources (Burley and Hobler 1997).

Land-based fur trade, which developed simultaneously as maritime fur trade, emerged with the 1794 establishment of the Rocky Mountain Fort and moved westward under the efforts of the North West Company (Burley and Hobler 1997). After the cessation of Russian America to the British in 1805, the Hudson's Bay Company also began operating within the region (Carlson 2010). While fierce competition characterized these companies' early interactions, they united in 1821 (Burley and Hobler 1997). Trade was brought further into the interior of British Columbia with the New Caledonia Trade led by Simon Fraser. Here Fraser encountered very different Native peoples, landscapes, and resources than previously experienced by Euro-American traders. Alexander MacKenzie and David Stuart also explored the territory while in search of new trading

post locations (Carlson 2000). Kamloops became a major trade station as the Fraser and Columbia Rivers offered easy transportation. Aboriginal trade routes throughout the locality also made it an ideal place for fur traders capitalizing on preexisting trade.

Indigenous reactions were anything but passive. Far from the notion that these exchanges had no real impact on indigenous communities or the stereotype of Natives being swindled into unfair deals, First Nation people were active agents in this extensive commercial enterprise in British Columbia (Carlson 2000). Burley and Hobler remind us that “trade was a diverse endeavour involving radically different peoples, incomparable geography, conflicting motivations, and quite different results” (1997: 2). Trading relationships were fragile and often volatile (Acheson and Delgado 2004). Europeans had to quickly modify their trading methods to appease First Nation groups by participating in longer negotiations and traditional ceremonies. However, Native people did not merely control trade formalities but also profited from their transactions (Fisher 1996; Prentiss and Kuijt 2012). In addition to benefiting from foreign goods, trade provided First Nation members a new means to create alliances and extend power (Acheson and Delgado 2004; Carlson 2000; Fisher 1997). The fur trade fueled inherent tendencies towards inequality with new opportunities for the development and transfer of surpluses beyond those available in the traditional socioeconomic order. This participation in the fur trade has been mistakenly used to demonstrate subservience in the ultimate “civilization” of the west (Klimko 2004). Such viewpoints undermine Native resistance to acculturation. Recent scholars have begun to emphasize material objects, cultural practices, and a creative reworking of ideas in maintaining ethnic identities (Carlson 2000, 2006).

The decades following the establishment of the fur trade witnessed further and even more dramatic change (Carlson 2010). The Fraser Canyon Gold Rush of 1858-1859, following in the wake of the previous gold rushes in western North America, gave rise to the town of Lillooet. The Cariboo Gold Rush of 1862 attracted additional settlers who were primarily British and Canadian to the Mid-Fraser region. As stressed relations between indigenous groups and newcomers increased due to the interruption of traditional St'át'imc lifeways, military forts and roadways were constructed to assert control over the region and aid European settlements. The arrival of Anglican and French Catholic missionaries in the 1860s also contributed an authoritative presence. The spread of infectious diseases, such as small pox, venereal disease, and tuberculosis, ensued with the influx of Europeans, devastating indigenous populations (Fisher 1996; Prentiss and Kuijt 2012). Government restrictions outlined in the Indian Act of 1876 denying the St'át'imc to traditional practices and resources furthered attempted ethnocide.

Ethnographers concerned with the threat of indigenous cultural extinction entered the Canadian Plateau Cultural Area in the late nineteenth and early twentieth centuries. These ethnographies include the works of anthropologist Franz Boas, geologist and ethnographer George Dawson, and ethnographer James Teit (Carlson 2000). However, in attempting to record “pristine traditional cultures” they ignored the processes of cultural change and adaptation.

The Bridge River Site

The Bridge River site lies along the western edge of the British Columbia region within a deep valley separating the Coast Mountains from the Camelsfoot Range near

present day Lillooet (Prentiss 2009, 2010; Prentiss and Kuijt 2012). Located near the confluence of the Fraser and Bridge Rivers, the site has optimal access to the 6-Mile Rapids fishery, which remains a significant salmon source for the Lillooet area. The site sits on a broad terrace vegetated by various grasses, Saskatoon berry bushes, rabbit brush, sagebrush, and ponderosa pine. The site features all the environmental factors necessary for the establishment of a large settlement, including accessibility to productive salmon rivers, relatively level land, proximity to water and wood, and shelter from harsh winter winds (Dawson 1892; Morin et al. 2009). As one of the largest winter villages in the region, the Bridge River site consists of approximately 80 housepits and numerous external features that are divided into northern and southern arc-shaped “neighborhoods” (Prentiss et al. 2008; Prentiss, Foor et al. 2012; Prentiss, Smith, et al. 2012; Sheppard and Muir 2010). While other villages within the region show greater disparities in house sizes, Bridge River housepits have a narrower range of diameter widths, spanning approximately 10 to 18 meters, which may signify different socioeconomic organizations from the Keatley Creek, Farrar, Bell, and McKay sites that show a size hierarchy (Prentiss et al. 2008; Sheppard and Muir 2012).

The dating of these structures reveals a complex pattern of repeated occupations and abandonments spanning 1800 years that correlates with broader cultural patterns seen in the Plateau Pithouse Tradition (Figure 2.2). This chronology is divided into four periods: Bridge River (BR) 1 (1800-1600 cal. yrs. B.P.), BR 2 (1600-1300 cal. yrs. B.P.), BR 3 (1300-1100 cal. yrs. B.P.), and BR 4 (600/800-145 cal. yrs. B.P.) (Prentiss et al. 2008). Periods BR 1- BR 2 witnessed the establishment of the village and steady population growth as evidenced by the increasing number and organization of housepits

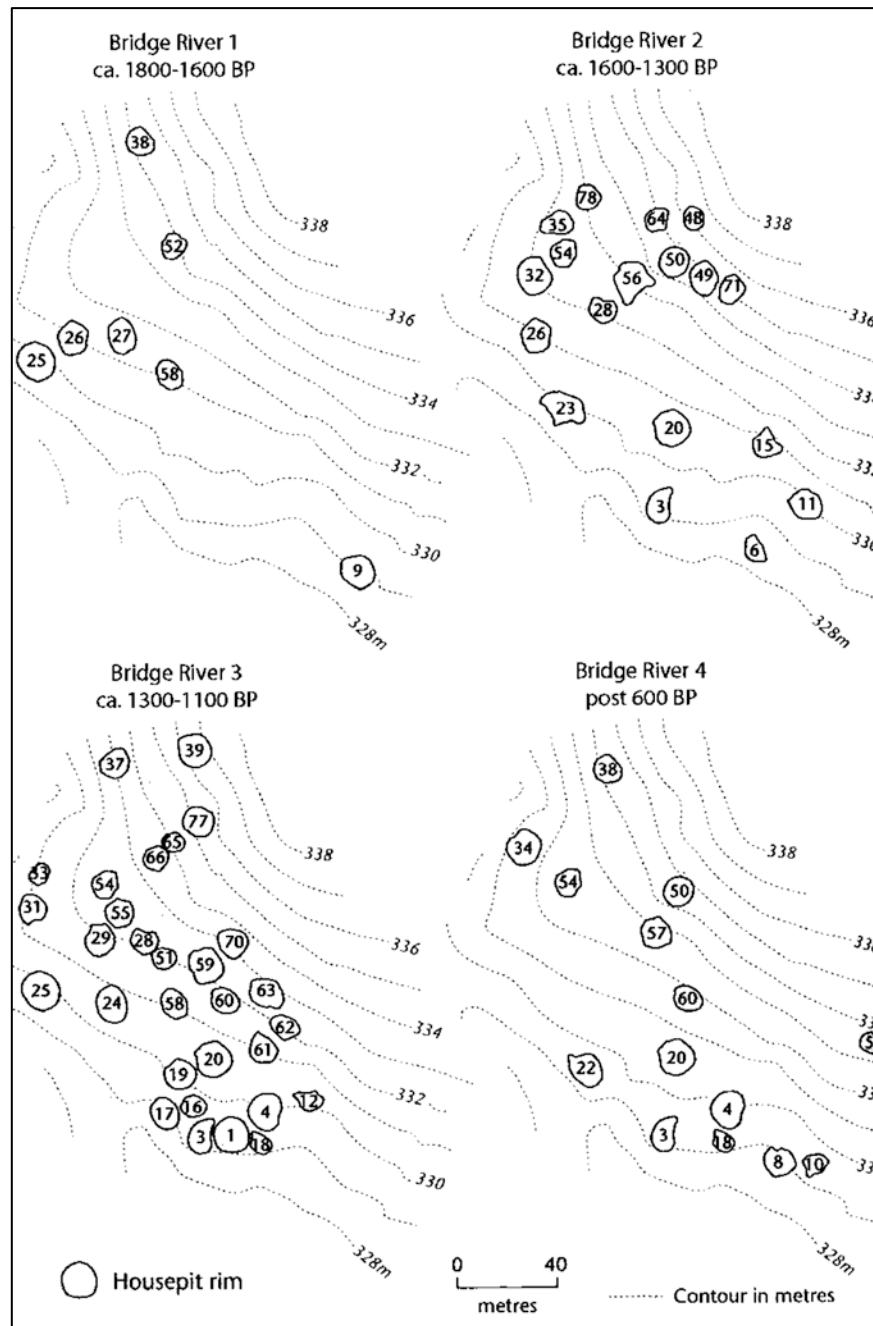


Figure 2.2. Map of Bridge River village showing the number and pattern of occupied housepits over time (Prentiss and Kuijt 2012: 108)

on the landscape. While during these periods the village appears to be relatively egalitarian, the BR 2 to BR 3 transition experienced dramatic demographic growth, climatic fluctuations, and declining resource availability resulting in increasing

competition and social inequality (Lepofsky et al. 2005; Prentiss et al. 2011; Prentiss, Foor, et al. 2012; Prentiss, Smith, et al. 2012). The termination of BR 3 commences a prolonged abandonment that stretches several hundred years. While some people may have remained, the majority of the Bridge River population relocated with neighboring kinship-based and trade alliances or established smaller communities along or near the canyon (Prentiss and Kuijt 2012). The final reoccupation associated with BR 4 extends from several centuries ago to the Fur Trade Era. While there were no dramatic shifts in lithic technology or subsistence strategies, settlement patterns show different clusters of small and large housepits with greater interhousehold wealth disparities and status distinctions (Prentiss and Kuijt 2012). The presence of European trade goods dating before the actual arrival of Europeans on the Pacific Coast served as further household differentiation. While little is known about this final settlement, the continuation of many cultural patterns ensures that its inhabitants were clearly St'át'imc.

Archaeological Research at the Bridge River Site

Initial investigations at the Bridge River site occurred with the Lillooet Archaeological Project directed by Stryd. A broad project, it involved the mapping and excavation of two major villages, the Bell and Bridge River sites, as well as nine smaller sites in the area (Stryd 1972; Stryd and Baker 1968; Stryd and Lawhead 1978). This work redefined the cultural chronology by placing the occupation of the Bridge River village within the same timeframe of the Keatley Creek site. The multi-staged University of Montana Bridge River Project, directed by Prentiss with the collaboration Bridge River Band (Xwisten), began almost three decades later. The goal of this project is to test two

different models of Mid-Fraser housepit village evolution and organization that was originally developed during research at the Keatley Creek Site (Hayden 2000a, 2000c). Hayden argues that the emergence of socioeconomic and political complexity associated with the Classic Lillooet period arose due to the behavior of self-interested, aspiring elites, which has been labeled the “aggrandizer model.” Prentiss et al. (2009, 2010), however, cite an alternative model for this cultural pattern that emphasizes the role of climatic warming, resource stress, and demographic growth.

The first phase of the project was limited to preliminary investigations that sought to understand changes in village size over time (Prentiss et al. 2008, 2009, 2010). This required extensive surface and subsurface mapping. Geophysical mapping derived from magnetic and conductivity surveys allowed the identification of datable features such as hearths and burnt roof beams in activity areas corresponding to strong positive and negative magnetic anomalies. The excavation of test units in HP 20, 24, and 54 followed to explore stratigraphy, collect artifacts and ecofacts, and find datable samples. Such efforts have made Bridge River the most completely dated large prehistoric habitation site in Western Canada (Morin et al. 2009). The development of the Bridge River cultural periods outlining the major occupations and abandonments was a result of this initial research (Prentiss et al. 2008). The second stage of the Bridge River project emphasized the excavation of housepits (HP 11, 16, 20, 24, 25, and 54) to better define changes in demography and socioeconomic organization (Prentiss et al. 2008). The findings from these excavations led to the selection of a single structure, Housepit 54 (HP 54), for future fieldwork.

Investigations of HP 54 continued during the 2012 field season when the uppermost strata were excavated. HP 54 is an intermediately sized structure in the northern “neighborhood.” One of few housepits to have been occupied across most of the four periods, HP 54 is stratigraphically complex structure consisting of 13-14 floors and seven roof deposits (Figure 2.3)(Prentiss, Carlson, et al. 2009). Intermediate in

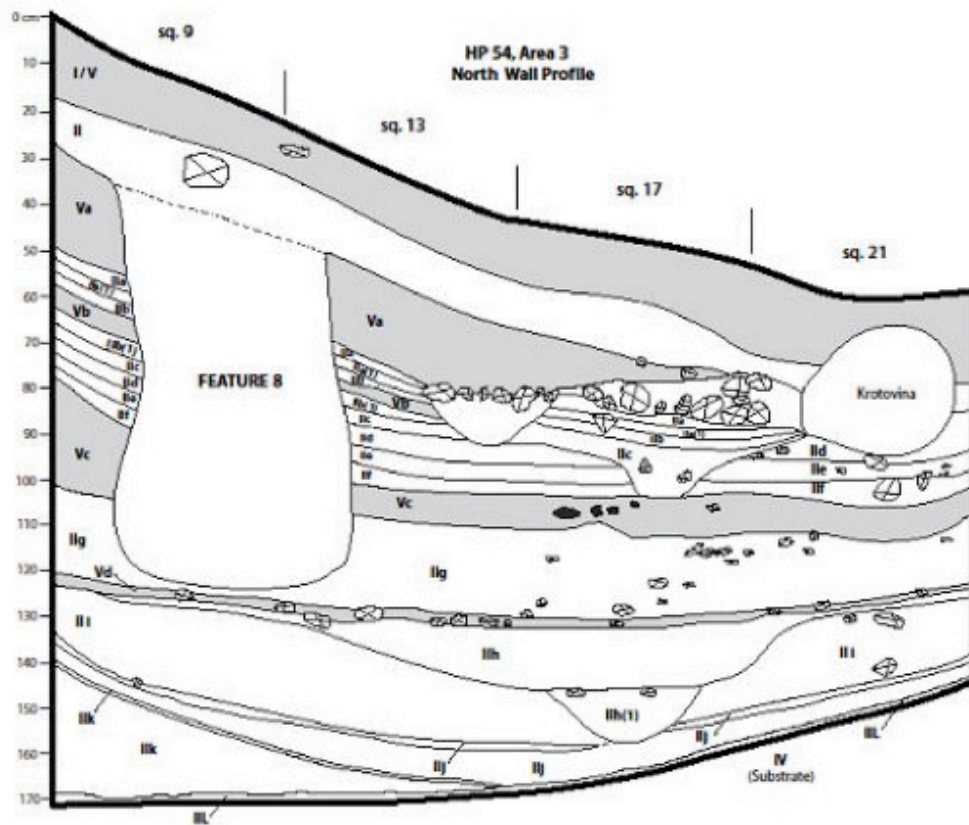


Figure 2.3. Stratigraphic profile of Housepit 54's North Wall (Prentiss et al. 2009: 142)

socioeconomic status, the HP 54 household evidences growing wealth during the BR 2 to BR 3 transition (Prentiss, Foor, et al. 2012). After the abandonment, when villages throughout the region operated on smaller population scales, HP 54 was reoccupied while other Bridge River housepits remained empty. While the broader scope of this project

seeks to understand the development of the Classic Lillooet Pattern, this final occupation offers an outstanding opportunity to examine the cultural practices of the St'át'imc during the equally critical Fur Trade Era and the relationship between ethnographic and archaeological records.

CHAPTER 3 PITHOUSES OF THE CANADIAN PLATEAU

The Evolution of Pithouses

Ethnographic pithouses (or archaeological housepits), semi-subterranean structures, were the preferred winter dwelling across the Canadian Plateau. While well known in this region, they have a much wider distribution, extending east of the Coast and Cascade Mountain Ranges, north into southern Alaska, and as far south as northern California (Barnett 1944; Nelson 1900; Smith 1947). The construction of pithouses occurred in cold, dry regions (Alexander 2000). In addition to providing warmth against winter conditions, pithouses served simultaneous roles as dwellings, food processing and storage plants, workshops, recreation centers, temples, theaters, and fortresses (Gahr 2006). Despite these benefits, pithouses were also costly, requiring a group effort in their construction and maintenance (Alexander 2000; Barnett 1944; Blanton 1994; Teit 1900). If other structure types were previously successful (Alexander 2000), why did pithouses emerge? To understand the appearance and persistence of pithouses on the plateau, it is necessary to examine the relationship between the evolutionary factors of seasonal subsistence strategies, resource intensification, and demographic change (Alexander 2000; Morin et al. 2009).

Before the advent of pithouses, a variety of structures were utilized, including small brush lean-tos and conical or rectangular shelters covered with bark, poles, branches, or mats that were covered with earth in cold weather (Alexander 2000). Evidence for the first utilization of pithouses during the Lochnore Phase is limited to two structures excavated at the Baker site (Rousseau 2004). The housepit depressions, dating

between 4,200 and 4,450 B.P., are small and oval-shaped. The residential and field camps, small to medium in size, were fairly deeply buried, suggesting relatively short-term occupational episodes. Some larger camps, however, may have been repeatedly occupied. This period is associated with high residential mobility and a generalized, broad-spectrum subsistence strategy with a limited reliance on stored provisions. Such a strategy would not have warranted the energy expenditure of pithouse construction, making these simpler structures more efficient before the Shuswap Horizon.

The Shuswap Horizon develops a logistically organized collector adaption emphasizing salmon and upland terrestrial resources, allowing greater surpluses, food storage, and regular winter residency in pithouses (Carlson 1996; Prentiss and Kuijt 2012; Rousseau 2004). These structures were relatively large, with an average diameter of 10.7 meters though sizes range between 7.6 and 16 meters (Carlson 1996; Prentiss et al. 2009, 2010; Rousseau 2004). Rather than constructing numerous smaller houses suited for smaller households, larger houses were more pragmatic for moderately mobile groups (Rousseau 2004); however, their adaptation would have greatly influenced household structure with the presence of multiple nuclear families. Circular or oval in shape, the pithouses have steep walls and flat floors (Prentiss et al. 2009, 2010). The houses have side entrances and large postholes indicating the use of a substantial wooden superstructure that was likely covered with earth. The presence and size of internal storage pits, cooking features, and hearths also suggests the houses were multi-family dwellings (Carlson 1996; Prentiss et al. 2009, 2010).

The Plateau Horizon coincides with greater logistically organized subsistence and settlement strategies as well as rapid population growth. Larger pithouse villages,

reflecting this demographic trend, also indicate continuous occupation over longer periods of time (Carlson 1996; Rousseau 2004). The establishment of these settlements near resource-rich areas or major salmon fisheries suggests greater control over resources leading to the establishment of private ownership of resource localities (Prentiss et al. 2009, 2010; Rousseau 2004). While Mid-Fraser housepits were quite large (8-20 meters in diameter), Plateau Horizon houses were typically smaller than those in the preceding or later stages. These house diameters range 4 to 8 meters with an average of 6.14 meters. Rousseau (2004) hypothesizes that this shift to smaller structures is tied to two phenomena. First, rapid population growth caused over-harvesting stress affecting upland food resources. This would have encouraged nuclear families (approximately five to ten people) for such households are easier to maintain than larger extended-family groups. Second, increased residential sedentism made it more practical to live in more private, smaller dwellings. Additionally, smaller houses required less effort to construct and maintain. While Rousseau (2004) cites that smaller houses would require less fuel to heat as a further factor in this transition, he ignores the fact that the body heat produced by multiple families living in a larger structure may have provided sufficient warmth (MacDonald 2000b).

While there are strong continuities in subsistence and settlement strategies in the Kamloops Horizon, there are significant changes in house construction and organization (Rousseau 2004). Increasing diversity of floor plan configurations appears with housepits having oval, circular, rectangular, or square shapes (Lepofsky et al. 2009; Prentiss et al. 2009, 2010; Rousseau 2004). Most houses also have prominent or well-defined peripheral earth rims. Though roof entrances were more common in previous horizons,

side entrances also appeared. Internally the structures also varied and included bowl-shaped, saucer-shaped, or basin-shaped interiors with depths ranging from 1 to 1.5 meters. Housepit diameters range from 6 to 20 meters and have a mean of 8.5 meters (Rousseau 2004). This return to medium- and large-sized structures may also reflect the reappearance of a larger household comprising of multiple nuclear families and potentially non-kin followers that joined in constructing and occupying a single residence. Hayden (1977, 2000b, 2005) suggests that larger houses were inhabited by wealthy elite corporate groups with differential wealth and access to resources. Such organizations have been suggested by the presence of multiple residential units with individual hearth and cache pit features. Rousseau (2004), however, offers a simpler scenario in which house sizes reflect the relative number of people in a household, intended duration of occupation, and availability of construction materials. In the Shuswap and Plateau Horizons, there is an inverse trend of decreasing housepit size and increasing populations; therefore the growth of housepit diameters could be associated with population declines.

The appearance and persistence of pithouses are directly tied to the evolutionary pressures of transitions in subsistence strategies and demographic trends. While initially developing in response to these fundamental factors, pithouses became more than simple shelter to their inhabitants. They became workshops, centers for ceremony, and spheres for enacting social dynamics.

Ethnographic and Archaeological Evidence of Mid-Fraser Pithouses

The study of housepits and the households they contain necessitates a greater emphasis on the house structure, formation processes, and contextual relationships among artifacts and features. By combining ethnographic and archaeological records, we may gain an enhanced understanding of how these factors interact. Ethnographies provide a unique perspective to archaeologists. While archaeologists study the cultural remnants of occupations and activities, ethnographers can capture these processes more dynamically through observation and interviews. However, ethnographic information can also be limited. Early accounts of pithouses were based on interviews with few informants, resulting in idealized descriptions that ignored variability and aspects of daily life (Alexander 2000; Allison 1990; Lepofsky et al. 2009). Even the renowned ethnographies of Teit (1900, 1906, 1909), Dawson (1891) and Boas (1900), while describing in detail Mid-Fraser pithouses, were written decades after these structures were abandoned. The archaeological record can supplement or contradict these accounts to create a more accurate and complete view of housepit occupation (Alexander 2000; MacDonald 2000a). The archaeology of households can be approached through two major lines of evidence: the data from sealed deposits that can be tightly dated to occupations and the information contained in the strata and features of the house (Beaudry 1989; Grier 2006). Only with an understanding of the structure, long-term formation processes, and relationships between artifacts and features can we approach household and socioeconomic organizations.

Pithouse Construction

The decision of where to build a pithouse depended on both environmental and social factors (Alexander 2000; Dawson 1891; Teit 1900). The location required a warm southerly exposure that was well sheltered against winds. The presence of dry sandy or gravelly soil that drained well was a crucial component of constructing semi-subterranean housepits. Proximity to fresh drinking water, wood, and fishing stations also figured into site selection. Members of the household built the housepit; those who did not help in the construction were forbidden to live there (Alexander 2000). Extended families as well as other village members often assisted in the construction in exchange for surplus food (Alexander 2000; Barnett 1944; Duff 1952; Teit 1900). The inclusion of these volunteers greatly reduced the timeframe of construction from one or more weeks to a single day (Teit 1900).

The next stage involved digging the housepit depression. To measure the extent of the depression's diameter, four men used lengths of rope that crossed at right angles to mark the center of the housepit as well as the locations for the four supporting beams. Women excavated the pit with digging sticks or wooden scrapers and removed the loose earth with baskets to be later used in roofing (Barnett 1944; Teit 1900). The depth of the depression varied approximately from 1.2 to 1.8 meters though some variation is present. A regional correlation exists between decreasing average winter temperatures and increasing depths, which provide greater warmth (Alexander 2000). While deeper pits may have been preferable, the lack of labor or resources could have led to shallower pits. Areas with a high water table also had shallower pits. Structures built into hillsides also

required less digging as soil removed from the upper slope could have been used to form the rim and roof.

The superstructure required a significant amount of lumber for the supporting posts and poles (Figure 3.1). The material may have been cut and hauled to the site in advance or during the construction (Alexander 2000; Teit 1900). Green timber was preferred for the main support posts and beams (Teit 1900). However, yellow pine, cedar,

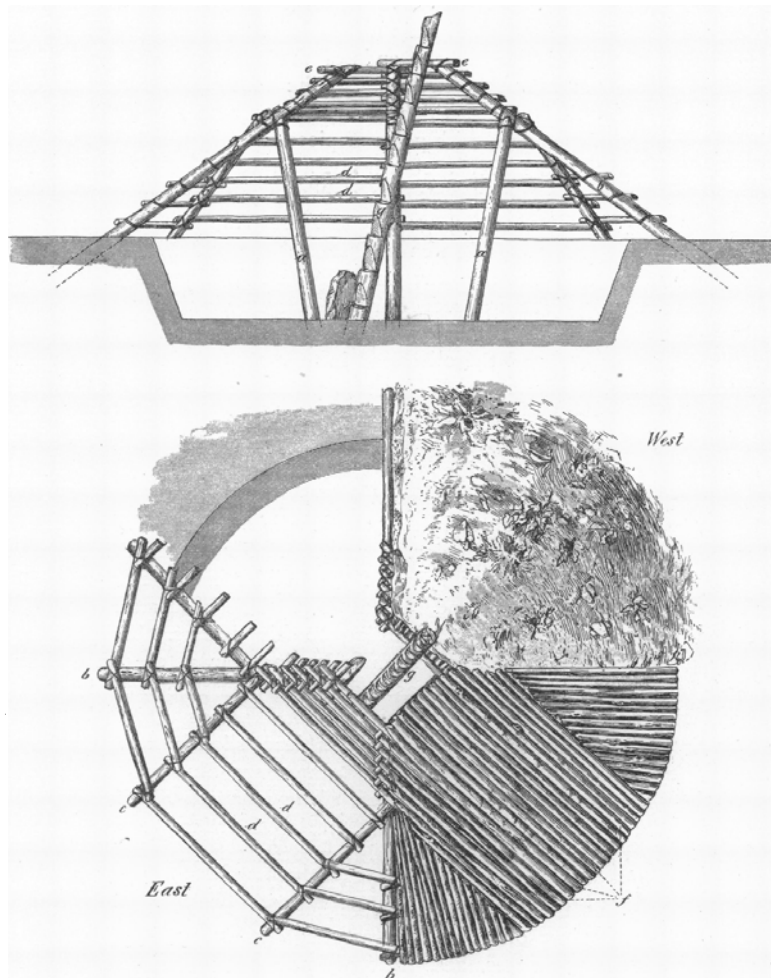


Figure 3.1. Housepit Superstructure and Roof (Teit 1900: 193)

and hemlock were also utilized. The timber was measured with bark ropes in accordance with the diameter of the hole. The trees were then cut, barked, and hauled by rope to the building site. Although worked with wedges, hammers, and stone adzes, generally these timbers were not squared. The thin poles used for the roof were also barked except when dry wood was available. Four central posts were used to create a square or rectangular frame on which dozens of beams were attached. Larger structures may have used more than four posts. Placed slightly into the ground between the hearths and peripheral sleeping areas, they often sloped outward or towards the center (Duff 1952; Prentiss and Kuijt 2012; Teit 1900); however, while this pattern has been described ethnographically, it has not been recorded archaeologically. Archeologists, frustrated by the presence of few or absent postholes, have suggested that it is possible that posts simply rested on the floor, though this would have undermined house stability (Alexander 2000). Smith (1947) describes that posts stood against the wall, which may have provided great strength to the structure. The tops of the braces were notched to support the rafters while their ends were placed about two feet into the ground (Smith 1947; Teit 1900).

Once the posts were in place, rafters were attached to form a framework for the roof (Teit 1900, 1906). The braces and rafters were securely tied with willow lashings. Rafters did not join in the center and side-rafters rested on the ground outside of the main rafters where they were supported by the uprights. The rafters were notched to connect with braces or they were merely tied together while the opposite ends of rafters were embedded into the ground. Horizontal poles placed one to two feet apart were lashed to these rafters and side-rafters (Laforet and York 1981). Towards the top these poles were

placed more closely together. This structure provided a platform for woven mats, brush, and earth (Barnett 1944; Dawson 1891; Teit 1900, 1906).

Two types of entries are present in Mid-Fraser pithouses: roof entrances and side entrances (Laforet and York 1981). Roof entrances were created with four heavy timbers connected to the ends of the rafters. Access inside was provided by a ladder made from a notched log (Barnett 1944; Teit 1900, 1909). Inclined passages or tunnels served as side entrances (Barnett 1944). Such entrances have been described as the “women’s entrance” as they allowed women to enter the house without disrespectfully walking over the heads of men (Alexander 2000). The side entrance would have also been beneficial for the elderly, transportation of goods, ventilation, and escape from attacks.

The pithouse structure has a relatively short lifespan, approximately 20 years, after which the wooden posts would begin to rot and old food and human waste would attract more vermin necessitating the structure be burnt down and built again (Alexander 2000; Hayden 1997; Prentiss and Kuijt 2012). Before the structure was collapsed, inhabitants often removed salvageable timbers to be reused. This was followed by the intensive cleaning of the interior depression with the removal of debris that was redeposited outside along the housepit rim. At times even the dirt floor was removed. These secondary deposits offer invaluable information to archaeologists who may with the careful excavation of this material uncover the life history of the house (Figure 3.2)(Hayden 1997; Prentiss and Kuijt 2012). Before the reoccupation of the house, inhabitants rebuilt the roof structure and inlayed a new floor surface, sometimes covering previous surfaces. This pattern overtime created the superposition of occupation surfaces that may reveal diachronic changes in the house. The recognition that both accretion and

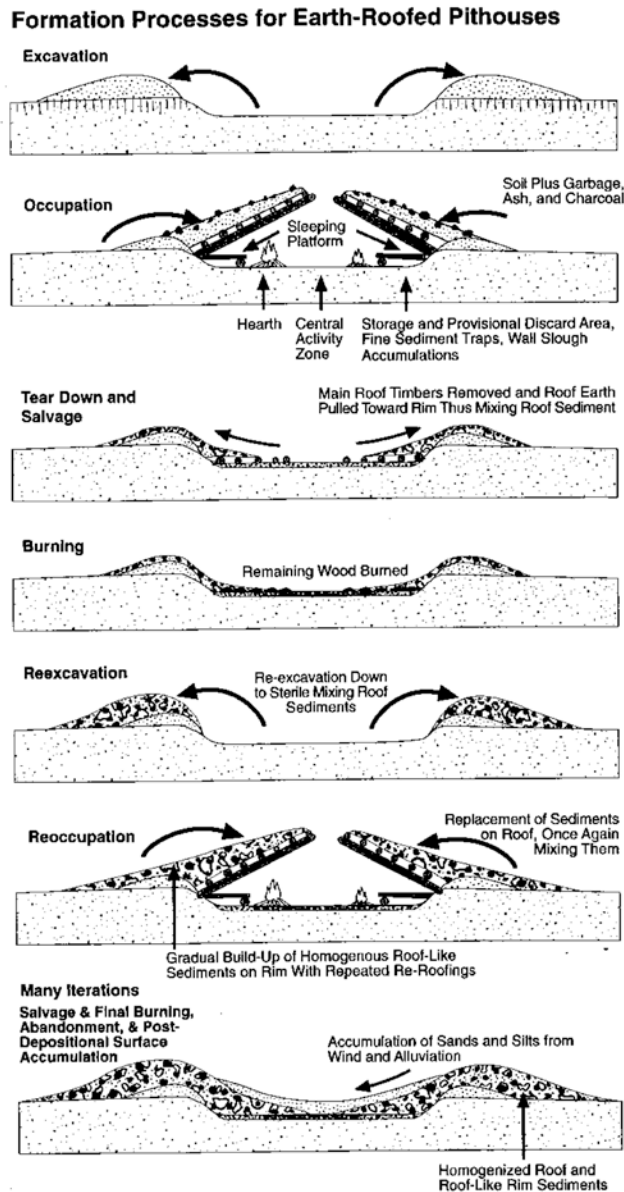


Figure 3.2. Formation Processes for Pithouses (Hayden 1997: 39).

depletion processes contribute to the formation of house floor assemblages and that the resulting patterns are related to stages of the structure's life history allows us to underline two aspects of floor formation processes: 1) there is a more complex relationship in artifact distributions; all objects used in a house are not likely to be deposited where they were used nor were all objects deposited in the structure were necessarily used there, and

2) household assemblages may reflect many different phases of the structure's life history (LaMotta and Schiffer 1990).

Pithouse Interiors

While ethnographers were detailed in their descriptions of pithouse construction, they often overlooked house interiors (Dawson 1891; Teit 1900, 1906, 1909), requiring a greater emphasis on archaeological evidence to understand spatial organizations, features, and artifact distributions.

Spatial Organizations. Two predominant spatial organizations were present in Mid-Fraser housepits; those marked by individual residential areas or shared activity spaces. Geophysical evidence from the 2008 Bridge River excavations indicates that once established, these floor plans remained fairly consistent across generations even when the structure was rebuilt (Prentiss et al. 2008, 2009). However, a shift in layout could suggest a drastic change in household makeup.

Ethnographic records and archaeological investigations of the Lower Lillooet and Thompson indicate that multi-family structures were divided into distinct domestic areas evidenced by individual hearths, cache pits, and midden features (Alexander 2000; Hayden 1997; Middleton 2000; Spafford 2000; Teit 1900, 1906). Similar patterns have been observed at the Ozette site (Samuels 1989, 2006). The layout of these features followed several concentric circles (Coupland et al. 2009; Duff 1952), known as the bench, hearth, and central zones (Samuels 1989, 2000). Within these areas there were specific designations for sleeping, storage, tool making, and cooking for each family (Prentiss and Kuijt 2012). In large houses the center was left open and clean to allow

easier movement between family zones and to accommodate more people for large gatherings such as winter dances and feasts (Prentiss and Kuijt 2012).

Structures among the Shuswap and Lillooet displayed several shared activity areas rather than separate domestic units (Teit 1909). Such a spatial organization has also been observed in smaller housepits at the Keatley Creek and Bridge River sites (Alexander 2000; Hayden 1997; Middleton 2000; Prentiss and Kuijt 2012; Spafford 2000). These activity areas, or “rooms,” were named by quadrant or direction and were used for cooking, sleeping, tool making, or storage (Prentiss and Kuijt 2012; Teit 1909). The central area of the house was public space. While larger structures with this organization may have had a single central hearth, some smaller structures lack the significant accumulation of ash or reddening of soil associated with permanent hearths. This suggests that inhabitants of smaller housepits relied primarily on body warmth to heat the structure (Hayden 1997).

Features. A variety of feature types are present in Mid-Fraser pithouses, including hearths, benches, cache pits, and middens. While the layout of these features may differ between the two major floor plans, their formation and utilization remain consistent.

The number, size, and permanence of hearths depended on the size and organization of the house structure. Multi-family structures evidence numerous hearths for each domestic unit (Alexander 2000; Hayden 1997; Prentiss and Kuijt 2012). While multiple hearths might not have been necessary to provide heat with body heat contributing a lot of warmth, each family would have required one to cook food. This is also supported by the high amounts of fire-cracked rock in these pithouses (Hayden 1997). Usually these hearths are quite large and marked with reddened soil. Heavy

accumulations of ash may or may not be present. Structures with shared activity rooms often have a large central hearth; however, smaller housepits with this organization sometimes lack the significant ash accumulation and soil reddening associated with permanent hearth features (Alexander 2000; Hayden 1997). This suggests that these inhabitants relied primarily on body heat to warm the structure.

Benches, whether earthen or wooden, ran along the inner perimeter of most housepits in the region (Alexander 2000; Teit 1900, 1906, 1909). Such areas served as sleeping and activity areas. Ethnographic records emphasize the presence of wooden structures covered with planks placed near or against the wall (Teit 1900, 1906, 1909); however, some housepits contained earthen benches created out of fill material (Prentiss et al. 2009, 2010). Benches were covered with a “mattress” of hay, grass, tree boughs, needles, or cedar bark, all of which was replaced frequently as vegetation became too dry (Alexander 2000; Teit 1900). These surfaces were covered with hides, furs, or woven blankets (Teit 1900, 1906, 1909). While benches may have extended the entire inner periphery of large houses, they may have been more limited in smaller structures with a tight use of space (Alexander 2000).

Storage served a crucial role in winter households within the Canadian Plateau. Two types of storage are seen throughout the Mid-Fraser Canyon, elevated wooden caches and underground caches (Alexander 1992b, 2000; Teit 1900, 1906, 1909). Due to a dryer climate and sandy soil conditions, these underground caches were the most suitable for food preservation within this region (Teit 1909). Circular in shape with variable diameter measurements, they typically had a depth of approximately 1 meter (Teit 1900). Carefully lined with birch bark and juniper to prevent moisture and insect

infiltration, the pits were filled with subsistence provisions, tools, and raw materials for the winter months (Hayden 1997; Teit 1900, 1906; Prentiss and Kuijt 2012). The number and size of cache pits can not only indicate changes in demography, but also independence of household families and shifts in socioeconomic status, as increased surpluses were necessary in the negotiation and extension of power (Coupland et al. 2009; Hayden 1997; Prentiss, Foor, et al. 2012).

Middens are incredibly complex features that require careful excavation to understand the wealth of material they contain (Ames et al. 1992). More than mere refuse, middens contain faunal and floral remains, fire-cracked rock, and artifacts that may reveal trends in resource use. Midden pits acted as interior receptacles for debris during housecleaning activities. At times empty cache pits were filled with such material (Smith 2011; Smith and Carlson 2012). Exterior rim middens consist of waste materials that were dumped around the house depression during their occupation or rebuilding efforts (Hayden 1997; Hayden et al. 1996; Prentiss and Kuijt 2012).

Artifact Distributions. Several factors affect the deposition and distribution of artifacts, including processing or production activities, loss or discard of objects, and the secondary deposition of materials through cleanup or renovation efforts (LaMotta and Schaffer 1990; Schiffer 1972; Samuels 1989, 2006). As winter houses, pithouses served as workshops to create the tools and materials needed throughout the year (Alexander 2000; Carlson 2000; Morin et al. 2009). Such activities included lithic tool production, hide working, wood carving, and food processing. The primary stages of lithic reduction, hide working, and butchering, which created high amounts of debris, were likely performed on the roof while following modifications occurred inside (Alexander 2000).

Not only did these activities require specific tool kits but also left distinct debris with which to interpret activity areas. Especially diagnostic are microdebitage and microfauna, which continue to outline activity areas once larger detritus has been removed (Fladmark 1982; Hayden and Handly 2000). After being created through production activities or food processing, microdebitage and microfauna were often further fragmented and incorporated into the soil matrix due to trampling (Samuels 2006; Stahl and Zeidler 1990). In multi-family structures divided by domestic units such distributions of material would be present in the bench and hearth zones where the majority of activities took place while the center or “high traffic” zone would remain fairly clear of larger artifacts. Pithouses with shared activity areas would display distinct assemblages restricted to each “room.”

Discarded or lost objects may not directly indicate locations of production or processing because they may reflect post-depositional activities (Samuels 2006). However, the concepts of drop, toss, and dump can aid in the interpretation of these artifact assemblages (Binford 1978). Dropped items, usually deposited near hearths, consist of small elements detached from a larger object or heavy cached items. Tossed items include those that are no longer necessary after the completion of some action. Although Binford (1978) describes that they accumulate around the margins of the activity area from where they have been thrown, they may additionally concentrate around features used to dispose of refuse, like middens and hearths. Dumped materials include waste that is intentionally placed in a location, such as a basket for future removal outside of the structure (i.e. roof or peripheral rim) or inside an interior midden (Binford 1978; LaMotta and Schaffer 1990).

Post-depositional, or secondary, deposits include those moved during cleaning or renovation efforts. Housekeeping activities such as sweeping removed the larger debris from the floor to be redeposited either in an interior midden or outside on the roof of structure rim (Hayden 1997; Hayden and Handly 2000; Prentiss and Kuijt 2012; Stahl and Zeidler 1990). Despite these cleaning efforts, high artifact densities occur along the walls in the bench zone or near posts where items were often swept aside and forgotten (Prentiss and Kuijt 2012; Samuels 1989; Stahl and Zeidler 1990). However, since these locations also accumulate cached objects, also known as “positioning items” (Binford 1978) or “provisional discard” (LaMotta and Schaffer 1990), that are unobtrusively placed as not to interfere with ongoing activities, confusion between these assemblages can occur. Secondary deposits can also occur during the rebuilding of the structure. While sometimes new soil material was imported to create a new floor surface on top of the previous one, at times the previous floor material and the artifacts it contained were removed to create a clean surface (Hayden 1997).

Application in Household Studies

The cultural deposits associated with housepits did not form haphazardly; therefore, understanding the interaction between the structure, formation processes, and artifact distributions is essential to understanding not only spatial organizations but also the household socioeconomic relationships they reflect. Several aspects of the pithouse structure are especially telling, such as house diameter and superposition of floors, which can reveal household size and temporality. Variations in the size, number, and placement of interior features may reflect the two predominate floor plan strategies observed in the region, residences divided by domestic units or shared activity areas. Disparities in

artifact distributions are also influential in exposing such spatial designations. Together these patterns enable an enhanced understanding of how household members acted and interacted.

CHAPTER 4 STRUCTURING HOUSEPIT RESEARCH: A HOUSEHOLD ARCHAEOLOGY FRAMEWORK

Development of Household Archaeology

Scholarly interest in the domestic group is rooted in late 19th century ethnographical studies of family and kinship (Foster and Parker 2012; Gillespie 2000a; Morgan 1881). Rather than emphasizing function, these accounts outlined the morphology of both the house structure and household it contains. Household compositions were described in terms marriage systems and residence rules, which were seen to be the strongest determinants in structuring social and economic relationships (Foster and Parker 2012; Gahr et al. 2006; Kramer 1982; Netting et al. 1984). Descriptions of house structures, although detailed, concentrated on construction while aspects of interior spatial organization reflecting activities and socioeconomic relationships are largely absent (Boas 1900; Kramer 1982; Smith 1947; Teit 1900, 1906, 1909). Twentieth century anthropological research also suffered from limitations of kinship in understanding households. Most of these studies equate “household” with the nuclear family (Yanagisako 1979). Such beliefs that household composition is standardized resulted in the trivialization of intrahousehold relationships in the wider scope of human behavior (Allison 1999). This phenomenon can be tied to the most prominent characteristic of households: their ubiquity. Because households are fundamental social, political, and economic institutions, their presence has been noted worldwide (Allison 1999; Ames et al. 1992). However, it is this “mundane, repetitive, cross-culturally obvious appearance of households” (Netting et al. 1984: xxi) that led researchers to think they are uninteresting and unproblematic subjects.

To move beyond kinship many anthropologists and archaeologists began to conceptualize the household as a dynamic entity whose structure was influenced by many intertwining factors (Foster and Parker 2012). The earliest example is the “development cycle of domestic groups,” which theorized that the domestic group underwent a regular series of changes comparable to the growth cycle of a living organism (Fortes 1958; Foster and Parker 2012; Netting et al. 1984; Roth 1989). Although it highlighted the social, economic, and morphological changes households experience, its uniformity and generalization limited its applicability. Later attempts include the separation of *household* and *family* by anthropological archaeologists who sought to overcome the narrow conceptualizations of households described in the ethnographic record (Foster and Parker 2012; Wilk and Netting 1984). While *families* are self-identified kinship entities, *households* were defined as groups of individuals sharing a habitation space and sets of activities associated with the daily necessities of living. However, these concepts are characterized by ambiguity and dependence on folk categories (Wilk and Netting 1984), preventing the development of methodical means with which to find and test data.

Archaeological research and excavations on houses were not common until the 1950s; however, when they were encountered, they were viewed as clusters of features rather than as a unit of analysis (Gahr et al. 2006). Typical to the culture-historical theoretical approach, most archaeologists simply marked structure absence or presence as an indicator of a cultural extent or evolutionary stage (Gahr et al. 2006; Netting et al. 1984). Such broad evolutionary syntheses were “linear, too simplistic, and rooted in ideological preconceptions” (Netting et al. 1984: xviii). Due to these ties to the culture historical approach and progressive models of cultural evolution, archaeological

approaches saw the household as so self-evident and cross-culturally valid that further investigations seemed unnecessary. The advent of processual archaeology, which moved beyond trait listing and categorization to see material culture as evidence of human behavior, enabled the formal development of the archaeological study of households (Foster and Parker 2012). A focus on processes permitted households to be understood in terms of their function rather than just their morphology (Foster and Parker 2012; Wilk and Rathje 1982). Ethnographic and ethnoarchaeological analogies became essential tools for relating behavior patterns to their material remnants. However, the relationship between archaeology and these methods was two-sided. Archaeologists also began to recognize that households provided the only means to test the ethnographic record (Gahr et al. 2006).

Archaeologists of this era also sought to integrate various scales of analysis in their research design to augment their approaches. In this “downsized” research, the focus of the analysis progressively moved to smaller units from broad institutions such as entire cultures, traditions, and phases to the site and finally to the structure (Coupland 1985). This trend to more specific units of analysis allowed archaeologists to build theories bridging the gap between the archaeological record and the prehistoric cultural system (Ames 2006; Coupland 1985; Deetz 1982; Grier 2006; Netting et al. 1984; Wilk and Rathje 1982). Household archaeology, first introduced as a concept and method by Wilk and Rathje (1982) in their seminal issue of *American Behavioral Scientist*, seemed ideal for crossing this “Midlevel Theory Gap.” Households have an emergent character that makes them more than the sum of their parts; they are the primary arena for the expression of age and sex roles, kinship, socialization, and economic cooperation, where

culture is mediated and transformed into action (Netting et al. 1984). As a basic unit of organization, they exist at the level where social groups articulate with larger scale socioeconomic and ecological processes (Bawden 1982; Wilk and Rathje 1982). The greatest advantage of the household as an analytical unit is their visibility (Coupland 1985; Horne 1982). The material correlates of the households, such as the structure and activity areas, can be defined and measured in space. Their size, small enough in scale to permit an efficient and dependable study, furthered the advancement of household archaeology (Deetz 1982; Horne 1982).

A founding principle of household archaeology is that households can serve as links between high-level theories of social change and material culture (Foster and Parker 2012). In bridging these, scholars have discovered that households are dynamic in function, form, and behavioral activities that vary in space and time (Wilk and Netting 1984). Rather than resulting in a unified approach of households, this ambiguity has led to the diversification of the subfield, yielding a multitude of approaches drawing on Marxist, structuralist, evolutionary, and feminist theories. Despite the potential household archaeology offers, it remains a diffuse subfield with few unified conceptual or methodological approaches (Foster and Parker 2012). However, the recognition that these theoretical frameworks are not mutually exclusive and can be productively unified can contribute to the strength of this approach (Ames 2006; Gahr et al. 2006)

Defining the Household

Defining the *household* has proved problematic. It is a polysemic word that draws on folk and analytic vocabularies alike; because it can mean so many things to different

people it has often defied definition (Netting et al. 1984; Wilk and Netting 1984; Yanagisako 1979). Initial definitions of *households* emphasized their morphology in kinship terms. However, these attempts were too bound in marriage systems and residence rules to aid analysts in understanding behavior. Following conceptions continued to highlight composition, though they began to broaden beyond strict kinship ties. Blanton (1994) differentiates between *simple households*, comprising the nuclear family, and *complex households*, which include one or more nuclear families, extended family members, individuals, and servants. Other definitions emphasize a set of individuals sharing a living space while also acknowledging that the domestic group does not always or everywhere reside in a single dwelling (Coupland 1985; Kramer 1982). Wilk and Rathje (1982) conceptualize the household as consisting of three elements: 1) the *social*, the demographic unit including the number and relationships of the members; 2) the *material*, the dwelling, activity areas, and possessions; and 3) the *behavioral*, the activities it performs. This morphological definition provides the greatest opportunities for analyzing and understanding households.

Functional definitions allowed a greater focus on how households behave. Households are united through four essential activities: 1) *production*, the scheduling of labor through linear or simultaneous tasks; 2) *distribution*, the movement of resources from producers to consumers (i.e. pooling or sharing); 3) *transmission*, the movement of rights, roles, land and property between generations; and 4) *reproduction*, the rearing and socializing of children (Wilk and Netting 1984; Wilk and Rathje 1982). While all of these behaviors occur within a household, different approaches may underscore one or more actions. Evolutionary and ecological research sees the household as the fundamental

socioeconomic institution and has typically centered on the production and distribution of goods as well as biological reproduction (Ames 1992, 2006; Samuels 2006). In the definition of the *House*, structuralist theory emphasizes the transmission of material and cultural property in addition to the cultural and biological aspects of reproduction.

Evolutionary and Human Ecology Approaches

In evolutionary theory the *household* is the most commonplace and basic socioeconomic unit. Like an organism, the household is very flexible and responsive; it is sensitive to minor, short-term fluctuations in the socioeconomic environment (Bawden 1982; Netting et al. 1984). Even the house structure, as seen in the previous chapter, is sensitive to evolutionary pressures, such as shifts in subsistence organization and demographic trends. Access to resources, seen in the actions of production and distribution, is associated with the size of the household and the structure (Ames 2006; Netting 1982). Differences in socioeconomic status may influence household size in its effect in the demographic performance of members (Netting 1982). Poorer households have fewer births and a higher rate of infant mortality while also being at risk of losing their dependents, servants, or employees to wealthier households. Rich households, however, profit from a larger labor force and enhance their status and prestige by maintaining larger residential groups.

According to Wilk, the household is the logical analytical unit for human ecological studies not only because households adapt in concrete and observable ways but also because they provide a space for individual patterns of choice and strategic behavior (Ames 2006; Joyce 2000; Netting et al. 1984). The household is the prime means by which individuals adapt to the subtle shifts in opportunities and constraints that

they face. This approach uses the concepts of economic production and biological reproduction to see household behavior as the combined decisions of individuals weighing risks against benefits (Ames 2006; Coupland 1985; Wilk and Rathje 1982). Such a perspective allows an understanding of strategies utilized for managing risk, household organization according to divisions of labor, leadership, inequality, and the ways in which households articulate to macroscale socioeconomic systems.

Structuralist Approaches

The Lévi-Straussian *House* “a corporate body holding an estate made up of both material and non-material wealth, which perpetuates itself through the transmission of its name, its goods and its titles down a real or imaginary line, considered legitimate as long as this continuity can express itself in the language of kinship or of affinity and, most often, both” (Levi-Strauss 1982: 174). Lévi-Strauss developed the concept of the house based on his understanding of the Kwakwaka’wakw *numayam* and Northwest Coast house societies. Because the continuation of *Houses* depends on the successful execution of strategies for maintaining its estate and reproducing its members over generations, this socioeconomic unit emphasizes processes of transmission in addition to cultural and biological aspects of reproduction (Ames 2006; Coupland et al. 2009; Gillespie 2000a). Through the spatial ordering of the structure and repetitive daily activities, *Houses* are performed into existence; that is *Houses* simultaneously reflect and reproduce the social, political, and ideological principles of their occupants (Blanton 1994; Coupland et al. 2009; Grier 2006; Lepofsky et al. 2009; Marshall 1989, 2000).

While *Houses* are manifested through the building and its members, the *House* lives longer than these aspects that comprise them (Ames 2006; Gillespie 2000a). Over

time the structure may be rebuilt though the same floor plan is often used over substantial periods of time (Grier 2006). *House* members must also be replaced. Biological reproduction is one means of supplying new members. However, as recognized by Lévi-Strauss in Northwest Coast house societies, kinship is not the sole element contributing to the organization and persistence of the *House* (Gahr et al. 2006; Gillespie 2000b; Marshall 2000). Recruitment is a crucial strategy of house reproduction. Membership may be fluid through time and does not impact everyone equally; people can simultaneously belong to a single house, multiple houses, or no houses (Ames 2006; Gillespie 2000a). Residents, related through a combination of descent, marriage, and patron-client links, cooperate in pursuit of the economic and social persistence of the *House* (Joyce 2000). This communalism contributes to the shared identity of the domestic group (Blanton 1994; Gillespie 2000b; Sandstrom 2000). However, the *House* is also characterized by hierarchy and contention between individuals with conflicting interests (Joyce 2000; Marshall 1989; Sandstrom 2000). This tension is negotiated daily through *habitus* so that the dwelling becomes a material symbol that articulates, naturalizes, and validates different levels of rank (Coupland et al. 2009; Marshall 1989).

Integrating Approaches

Despite the fundamental theoretical differences between evolutionary and structuralist approaches, significant overlaps exist in the approaches' attempts to understand household form and function. The *household* and the *House* both fall into Wilk and Rathje's morphological definition of consisting of social, material, and behavioral aspects. While highlighting specific actions over others, the evolutionary and structuralist analytic units participate in production, distribution, transmission, and

reproduction. In each paradigm the *household* and the *House* are central, even fundamental, socioeconomic institutions in society that provide links to micro and macro scale social processes (Ames 2006). Also, because the *household* and the *House* evolve in a wide range of social and economic contexts, they are especially valuable in understanding the development of inequality. These similarities show that while stemming from different theoretical positions the *household* and *House* are not mutually exclusive concepts. As Deetz notes:

Whether a structural, functional, or evolutionary approach is taken to obtain this information, the household reveals relationships of thought and substance that can aid immensely in understanding the past. Perceiving these relationships on a scale that is manageable might allow us to project beyond the household to the community and the state. We will probably never excavate an entire state, but tens of thousands of households await our attention.” (Deetz: 1982:724)

It also important to understand what households are not. Households are ethnographic phenomenon, not archaeological ones. While households live in and use material culture, Wilk and Rathje (1982) remind us that archaeologists excavate dwellings and domestic artifacts, not socioeconomic units. However, as Horne states, “If the domestic dwelling is the physical and spatial expression of those who live and work therein, then archaeologists are in a good position to argue from the remains of house structures to aspects of the household” (1982: 677). This requires the inclusion of ethnography and cultural anthropology to structure archaeological findings (Allison 1990, 1999; Wilk and Rathje 1982). However, the over reliance on these sources can normalize past domestic behavior; in these circumstances archaeology can offer a greater understanding of variation. As seen in the previous chapter, both ethnographic descriptions and archaeological evidence are necessary to understand the complex

relationship between the structure, formation processes, and artifact distributions that create household deposits.

For this analysis, I will draw on both evolutionary and structuralist theories to define the *household* as 1) a group of individuals (often bonded through kinship) that act together as the fundamental unit of production and reproduction (Ames 2006; Coupland 1996; Samuels 2006; Teit 1900), 2) a self-perpetuating structure holding an estate composed of material and non-material wealth and the people whom reside within it (Ames 2006; Coupland 1985; Lepofsky et al. 2009; Springer and Lepofsky 2011), and 3) a shared identity often linked to kinship (Ames 2006; Lepofsky et al. 2009; Springer and Lepofsky 2011). While these definitions stem from different approaches, they may be integrated to provide a more comprehensive perspective (Ames 2006; Gahr et al. 2006).

Household Strategies

Knowledge of spatial organization can lead to a greater degree of understanding of the numerous interlocking elements of the social structure and their interaction within the total cultural structure. The household organization reflects specific socioeconomic strategies that are shaped by the community's methods of adaptation to its physical and cultural environments (Bawden 1982). As the relationships and activities of these strategies are performed daily, they become manifested spatially and engrained into *habitus* (Coupland et al. 2009). The dual-processual theory describes two prominent sociopolitical strategies, designed to achieve and maintain power, which are present throughout society: network and corporate (Blanton et al. 1996; Feinman 2000). While opposing modes, they do not represent a binary typology but rather a continuous

spectrum of social complexity. These categories emphasize that complexity, wealth stratification, and the centralization of power do not always co-occur. The network and corporate strategies are not static spatiotemporally nor are they culturally bound in a way that implies specific groups of people immutably follow a single strategy. Recognizing these strategies and their spatial signatures is crucial for understanding intrahousehold relationships and ranking.

Network

In the network strategy power is focused on individuals and their personal networks. Here greater centralization of power is associated with hierarchical complexity and wealth stratification (Blanton et al. 1996; Feinman 2000). Within the Mid-Fraser Region this strategy is best seen in Hayden's (1997, 1998, 2005) aggrandizer model, which outlines the emergence of villages and socioeconomic inequality as the consequence of the behavior of self-interested and charismatic elites. He argues that the presence of inexhaustible resources like salmon coupled with technology allowed for the production and storage of large surpluses that could be manipulated by individuals seeking to increase their wealth and prestige. As surplus production increased, the power of aggrandizers also grew and consolidated until they could progressively exclude more people from elite status and gain greater control over valuable fishing and hunting locations (Hayden 1997; Hayden and Spafford 1993). Aggrandizers exercised their authority and prestige with these resources in regional trade to procure prestige items or costly demonstrations, such as feasts or elaborate gift giving (Hayden 1997, 1998). Such entrepreneurial actions create a network of obligations and alliances to the aggrandizer on social levels ranging from the region to the household (Feinman 2000; Hayden 1997).

These wealth-based actors draw prominence from their centrality to a network of extragroup exchange partnerships; therefore the elite both enhance their status and prestige by maintaining larger residential groups and profit by having a large labor force (Blanton et al. 1996; Netting 1982). The enactment of the network strategy requires a multi-family household that may have additionally included extended family members, individuals, servants, and slaves. To accumulate the necessary large surpluses for trade or prestational events, aggrandizers rely on the production of household members who are “lured” into surrendering their surpluses to meet contractual commitments (Hayden 1997). Such household production depends on patron/client relationships and specialization in addition to typical food processing (Feinman 2000). A variety of pretexts were utilized to convince household members to relinquish the fruits of their labor, including the needs to establish alliances to protect the community, compensate the losses suffered by these allies, secure peace through exchanging wealth, obtain advantageous marriages with desirable families, enhance the value of children for marriages, demonstrate the success and desirability of the house to attract new membership, and appease the spirits (Hayden 1997).

Spatially this network strategy is represented with multiple residential areas displaying differing amounts of wealth. Each residential unit consisted of individual hearths, cache pits, and artifact distributions coinciding with each family group (Hayden 1997, 2000b; Marshall 2000; Middleton 2000; Samuels 1989, 2006; Spafford 2000). The location of the family residence within the confines of the house was dictated by the relationship of the family to the house owner (Hayden 2000b; Samuels 2006). While wealthy residences are often associated in the southern hemisphere of the housepit where

it would have been warmer and lighter due to greater sun exposure, poorer families would have been limited to colder and possibly smokier locations (Hayden 1997). Differential access to high-ranking faunal subsistence resources, with wealthier families showing a narrower range of higher-ranked resources, such as salmon and deer, marked stable access to and possible ownership of fishing and hunting locations (Curet and Pestle 2010; Hayden 200b; Kusmer 2000a, 2000b; Prentiss et al. 2012). In addition to having less of these high utility subsistence sources, poorer families relied on a wider range of low-ranked foods. The ability to accrue large surpluses was reflected in cache pit storage capacity, with larger pits reflecting greater surpluses and wealth (Prentiss et al. 2012). Intrahousehold variability was also present in the quality, range, and accumulation of raw materials and lithics, with wealthier families having more access to higher quality and a wider range of materials (Hayden 2000b, 2000c, 2005; Marshall 2000). Such relationships are also present in the distribution of prestige goods and exotic items such as nephrite, cooper and shell jewelry, and carved bone and stone. Manufacturing specialization, as demonstrated by the presence of specialized toolkits in specific residential units, may be present (Hayden and Spafford 1992). These spatial trends have been described in Teit's accounts of the Lower Lillooet and Thompson in addition to the large pithouses of Keatley Creek (Hayden 1997, 2000b; Teit 1900, 1906).

Corporate

Within the corporate strategy access to power and wealth is less individualized, more likely to be shared, and often a product of group membership (Blanton et al. 1996; Feinman 2000). The formation of this strategy is associated with economic or environmental factors, such as population pressure and resource stress, that forces people

into accepting hierarchies (Hayden and Cannon 1982; Hayden 1997). Although this strategy may be associated with hierarchical complexity and stratification, it lacks the centralization of power in individuals seen in the network strategy. It is further characterized by communal ritual, emphasized food production, large cooperative labor tasks, more balanced resource accumulation, segmental organization, and suppressed economic differentiation. However, the level of communalism may vary, as seen with the difference between collectivist and communalist approaches, with some households engaged more frequently in a wider variety of communal activities (Coupland et al. 2009). Under collectivism, families and individuals may live and work together, but only because they recognize that participation in a multifamily household is the best way to achieve their goals, showing that while household members cooperate they are essentially self-interested. Communalism is defined by the greater stability and cohesiveness of the group that routinely produces and consumes as a unit.

Despite the marked communalism of the corporate strategy, it is not restricted to non-stratified social formations. Coupland et al. (2009) comment that among Northwest Coast groups there is a positive relationship between hierarchy and communalism in transegalitarian societies in that as households become more hierarchical they become not less communal but more so, showing that corporate hierarchies should not be equated with political or economic equality. In these societies socioeconomic differences are usually present between households or lineages (Blanton et al. 1996; Feinman 2000). Within households, certain individuals are more apt from birth to rise to ruling positions than others due to kin affiliations or other factors; once in a position of power, they could make key decisions that impact household socioeconomic relationships (Feinman 2000).

While their primary goal is to gain prestige, which is often accomplished through feasting and trade, their success depends on the willingness of their multi-family household. In these situations elites can exert influence on subordinates but cannot force them into action; this reflects the distinction between having “power to” versus “power over” (Coupland et al. 2009). In seasonally aggregated societies, these positions of leadership were often seen as shared or event-specific (Feinman 2000; Johnson 1989). Such social formations allowed for the seasonal organization of larger groups of people without any dramatic change in intrapopulation differences in wealth or power.

Non-elites may contribute their efforts to elites to secure economic stability, good treatment, or membership in a high-standing group; however, they remain in control of their own labor and are free to withdraw their support or leave the household if they feel exploited by their superiors (Feinman 2000; Coupland et al. 2009). Elites in transegalitarian households must balance the needs of their members while forwarding their own prestige simultaneously. Therefore by strengthening communalism by fostering solidarity and cohesiveness within the household, elites practice a strategy for achieving their socioeconomic ambitions.

The spatial signature of the corporate strategy may vary due to the extent of communalism involved. A collectivist approach may be reflected in the presence of multiple residential units, each with its own hearth, cache pit, and artifact distribution. While such a floor plan is also seen in households with a network strategy, this organization would show much less intrahousehold variability in the distribution of prestige items and high-ranking resources due to the suppression of economic differentiation seen in the corporate strategy. Some of these organizations also have a

large hearth in the central zone, a single concentration of fire-cracked rock, and lithic assemblages in opposing areas of the house suggesting different manufacturing activities (Hayden and Spafford 1993). Though these distributions could reflect manufacturing and craft differences between families, they are also indicative of greater cooperation along the collectivist-communalist spectrum. Greater communalism is most clearly materialized in a single, central hearth (Coupland et al. 2009; Hayden and Spafford 1993). The presence of shared activity areas for cooking, storage, sleeping, and tool making would also reflect this strategy. The peripheral bench may have allowed families to occupy individual sleeping spaces or a common sleeping platform may have been present. A single or few cache pits reflect greater sharing of faunal resources. Differences in lithic artifacts and debitage would reflect the purpose of a particular activity area rather than different residential units. Prestige items could be present, but may not be restricted in their distribution. Such floor plans have been observed in small and medium housepits at the Keatley Creek and Bridge River sites as well in Teit's ethnographic accounts of Shuswap and Lillooet (Alexander 2000; Hayden 1997; Middleton 2000; Prentiss and Kuijt 2012; Spafford 2000; Teit 1909, 1909).

Articulation with Previous Research

Questions on social inequality in the Mid-Fraser Region have centered on two opposing mechanisms: the aggrandizer and a complex interaction of demographic and environmental factors (Hayden 1997, 1998; Prentiss et al. 2009, 2010). Recognizing the appearance of network or corporate sociopolitical strategies may aid in this debate; however it is also important to remember that these sociopolitical strategies could have been employed simultaneously in different parts of the region or at the same village at

different points in time (Feinman 2000). The network strategy exercised by “ambitious, aggressive, accumulative” aggrandizers would be reflected by increasing intrahousehold socioeconomic inequality. Spatially this would be manifested as the multiple residential units differentiated by different distributions of resources and prestige goods seen with the ethnographic Lower Lillooet and Thompson as well as some structures at Keatley Creek (Hayden 2000b; Teit 1900, 1906). Under the corporate strategy people are forced into accepting hierarchical complexity due to economic and environmental constraints. Prentiss et al. (2005, 2008, 2009, 2010) contend that such conditions existed in dramatic demographic growth, declining salmon productivity, and increasing resource stress. While they have demonstrated interhousehold socioeconomic differentiation occurred at the Bridge River site, they have not yet approached intrahousehold ranking (Prentiss et al. 2012). Although it can be marked by hierarchical complexity and stratification, the corporate strategy lacks the centralization seen in the network mode. This could translate as the presence of interhousehold inequality and greater intrahousehold communalism. Such a strategy could be reflected by two spatial arrangements: 1) a collectivist approach with multiple residential units that lack significant differences in wealth and 2) a communalist approach with a central hearth and shared activity areas. Identifying these strategies is crucial for understanding household production and distribution as well as intrahousehold ranking.

CHAPTER 5 MATERIALS AND METHODS

The increasing use of Geographical Information Systems (GIS) methods has introduced improved methods to archaeological spatial studies on scales ranging from the region to the settlement (Fernandes et al. 2011; Fletcher 2008; Pugh 2003; Rua 2009). However, few studies have applied GIS in performing spatial analyses on smaller scale spatial phenomena such as individual structures. Such methods can allow the recognition of meaningful or random distributions of artifacts and features necessary to understand how households were organized socioeconomically and spatially. This analysis will highlight artifact and faunal distributions as well as clusters of such items in relation to features to interpret the spatial and socioeconomic organization of the HP 54 household. Performing such GIS analyses relies on the creation of several databases drawing on lithic, historic, and faunal data that describe a multitude of characteristics that may be queried. In outlining the methodology utilized in this research, it is first necessary to introduce the field and laboratory methods that were utilized in gathering data.

Excavating Housepit 54: Field Methods

The 2012 excavations of HP 54 emphasized the collection of a variety of data types allowing analyses of assemblage content and spatial organization. A superimposed grid of six blocks labeled A through H organized the excavations. Each block consisted of 16 1x1 meter squares that were further divided into four quads (NE, SE, SW, NW). Although these quads were applied in excavating floor, bench, and midden contexts, the larger units were utilized with surface and roof materials. Fifty-centimeter wide balks separating the blocks ran east to west and south to north (Figure 5.1). While preserving a

sample of archaeological materials for further investigations, the balks enabled the recognition of distinct strata throughout the housepit. Excavations proceeded in arbitrary levels within cultural strata. A total of seven strata were uncovered during excavation: stratum I (surface), stratum V (BR 4 roof), stratum II (BR 4 floor), stratum XIV (midden), stratum XVI (bench/rim), stratum Va (final BR 3 roof), and stratum IIa (final BR 3 floor). Strata I, V, and XVI were excavated in 10 cm levels and strata II, XVI, and IIa were excavated in 5 cm levels.



Figure 5.1. Excavation of HP 54 during the 2012 field season. Excavations were organized by blocks divided by 50 cm wide balks. Picture provided by Anna Prentiss.

A variety of data collection methods were employed. Cultural items, such as artifacts and faunal specimens, greater than 3 cm in maximum dimension and other items, such as charcoal, wood, birch bark, and fire-cracked rock (FCR), greater than 5 cm were point provenience mapped and individually collected. Excavated material was screened

through a 1/8-inch screen and all cultural items were collected by provenience. Systematic soil samples were collected for flotation, paleoethnobotanical, and geochemical analyses from specific quads. Lithic artifacts and faunal specimens were later recovered from heavy fractions of soil flotations. Feature materials were either collected entirely or sampled systematically in stratified contexts. These features, such as middens, cache pits, hearths, and postholes, were also recorded on strata maps.

Analyzing Housepit 54: Laboratory Methods

Lithic Assemblage

Various types of lithic materials were collected from stratum II, including debitage, flaked tools, groundstone tools, and cores (Table 5.1). These materials were recovered through several strategies such as in situ mapping, collection from screens, and separation from the heavy fractions of soil flotations. Due to these differences in data type and collection, distinct methodologies were followed for each type of lithic data.

Table 5.1. Housepit 54 Lithic Tools and Debitage from Stratum II

Lithic Artifact Type	Count
Abrader	4
Adze	3
Bead	2
Biface	7
Bipolar core	20
Blade	1
Bladelet	1
Debitage	2008
Heavy fraction debitage	1,373
Drill	6
Utilized flake	9
Hammerstone	3
Kamloops point	10

Knife	20
Metate	1
Multidirectional core	7
Ochre	1
Ornamental figurine	1
Plateau point	1
Piercer	5
Piercer/knife	3
Pipe	3
Point	7
Shuswap point	1
Scraper	55
Spindle whorl	2
Unidirectional core	1
Unknown	11
Wedge	8
Wedge/scraper	1

Debitage. The lithicdebitage assemblage consists of 2,008 individual flakes collected from point-providenced contexts or during the screening process. Analyses emphasized the collection of various characteristics ofdebitage, including material type, flake size (<1 cm², 1-2 cm², 4-16 cm², 16-64 cm², and >64 cm²), completion (Prentiss 1998; Sullivan and Rozen 1985), fracture initiation (Cotterell and Kamminga 1987; Hayden and Hutchings 1989), and amount of cortex (Mauldin and Amick 1989). These attributes will aid in interpreting lithic use within HP 54.

Tools and Cores. A total of 199 lithic tools and cores are present in the stratum II assemblage. The analysis of tools and cores emphasized classification of morphological attributes and material types. The Bridge River lithic typology was applied to all of the recovered lithic artifacts, though some additional types were included (Prentiss et al. 2009, 2010). Measurements for size were recorded for the width and length of each lithic artifact with sliding calipers. Edge angle measurements were performed with Wards Contact Goniometer. Every tool was inspected for use wear with a stereomicroscope

using up to 50x magnification. The number of employable units (Knudson 1983), or utilized margins of a tool, were also noted. The classification and interpretation of scar size, depth, shape, termination, rounding, crushing, and striations follow the descriptions provided by the Bridge River site reports (Prentiss, Carlson, et al. 2009; Prentiss et al. 2010). Edge retouch attributes were recorded, including retouch invasiveness (abrupt, semi-abrupt, invasive) and retouch form (scalar, step, hinge) (Prentiss et al. 2009, 2010). Groundstone tools, such as metates, spindle whorls, abraders, adzes, and figurines, were also identified by function.

Two types of cores were recorded: freehand percussion cores and bipolar cores (Andrefsky 2005; Odell 2003). Freehand percussion cores may be reduced according to a variety of strategies that involve the unidirectional or multidirectional removal of flakes. Such reduction strategies typically produce cone or bend initiations. To produce flakes, bipolar cores are placed on an anvil and hit with a hammer on the opposing side, creating wedge initiations that may occur on both the proximal and distal ends.

Fire-Cracked Rock. A total of 5,349 pieces of fire-cracked rock were observed in stratum II. The analysis of FCR involved calculating the unit or quad accumulations to show spatial changes in the concentration of this material. Totals were produced from combining FCR counts tallied during the screening process and point plotted in situ.

Heavy Fraction Lithics. The heavy fraction lithic assemblage is comprised of 1,373 flakes and possible tool fragments. For the purpose of this analysis, a simple description by size ($<1\text{ cm}^2$, $1\text{-}2\text{ cm}^2$, $4\text{-}16\text{ cm}^2$) sufficed. Distributions of different sized-lithics recovered from soil samples enables an examination of how lithics were utilized

across the HP 54 floor surface even when cleaning efforts may have removed larger artifacts and debris.

Historic Assemblage

The historic assemblage includes 12 metal and glass artifacts: 1 unknown glass fragment, 2 unknown metal fragments, and 9 glass beads. In addition to emphasizing object identification, analyses focused on size, completeness, material type, and manufacture method. The examination of the beads, aided by Dr. Tom Foor of the Department of Anthropology, The University of Montana, also highlights stylistic attributes, such as opaqueness, color, and design (compound or simple), to aid in identifying their origin (Karklins 1985). Bead color was determined using a Munsell Color Chart.

Faunal Assemblage

A total of 4,410 faunal specimens (Table 5.2) were recovered from stratum II through in situ discovery, collection from screens, or separation from the heavy fractions of soil flotations. The fauna was identified to the smallest taxonomic group possible. Every bone was analyzed for element type, side (right/left), end (proximal/distal), and relative age (juvenile/subadult/ adult) (Cannon 1987; Gilbert 1990). To aid in the identification process comparative collections from the University of Montana's Phillip L. Wright Zoological Museum and Anthropology Department were used. Dave Dyer, the curator of the Philip L. Wright Zoological Museum, provided additional support.

Fragments of unidentifiable mammalian species are classified according to relative size (small, medium, large). Small mammals include small-sized rodents through rabbit-sized; medium mammals include beavers through dog-sized. Large mammals

Table 5.2. Housepit 54 Fauna by Taxon from Stratum II

Class/Order	Taxon	NISP
Salmoninae	Oncorhynchus sp.	913
	cf. Oncorhynchus tshawytscha	5
	Salmonid (trout-sized)	74
Artiodactyla	Odocoileus sp.	26
	Ovis canadensis	1
	Cervidae	1
	Artiodactyl	5
Mammalia	Large mammal	293
	Medium/large mammal	917
	Medium mammal	27
	Small mammal	5
	Mammal	953
Carnivora	Canis sp.	7
	Carnivore	1
Aves	Aves	1
Indeterminate	Indeterminate	1183

are considered to be deer-sized and larger (Smith 2011). These fragments are categorized into six size grades (1-9mm, 10-19mm, 20-29mm, 30-39mm, 40-49mm, and 60+mm) to demonstrate differences in butchering techniques and the intensity of processing (Church and Lyman 2003; Smith 2011). Fracture type can also reveal additional processing within mammalian prey. While spiral and oblique fractures suggest marrow and grease production, linear breaks (e.g. transverse) occur more often in less fresh specimens (Alexander 1992; Gilbert 1990; Kusmer 2000b; Outram 2001). Irregular fractures can occur in small fragments due to heavy processing.

The presence of human modifications, such as blows, chopping marks, scraping marks, saw marks, and abrasion, are noted when present (Gilbert 1990; Lyman 1987; Reitz and Wing 2008). Bone tools, when present, were described. Taphonomic processes are also recorded. Weathering is assessed according to Behrensmeyer's (1978) five

stages, with a value of 0 signifying no weathering and 5 signifying that the bone is unrecognizable due to cracking and complete exfoliation. Burning is identified through texture and color, from being charred (black), to being completely calcined (white) (Shipman et al. 1984). Patterns in burnt bone can reveal how fauna were processed. Burnt bones can indicate whether meat was subject or near to heat during cooking, boiling, or smoking processes that increase the returns of the resource. Distributions of burnt bone can also reveal features such as hearths and middens.

Features

The stratum II floor contains 6 features and two stratigraphic designations corresponding to features that stretch across multiple blocks (Table 5.3). While by definition features are unmovable artifact types, their analysis is made possible in laboratory settings through the spatial analysis and examination of their contents. Formalized maps constructed from multiple field-drawn maps allow an examination of the relationships between features and floor plan organizations. The lithic, faunal, and historic materials recovered from these features were analyzed according to the methodologies described above.

Table 5.3. Housepit 54 Features

Block	Feature	Feature Type
Block A	Stratum XIV	Midden
	Stratum XVI	Bench
	Feature A1	Cache pit
	Feature A2	Shallow bowl-shaped pit (possible post hole converted to midden)
Block B	Stratum XIV	Midden
	Stratum XVI	Bench
	Feature B1	Shallow bowl-shaped pit

		(possible posthole)
Block C	Stratum XIV	Midden
	Stratum XVI	Bench
	Feature C1	Post hole
Block D	Stratum XVI	Bench
	Feature D1	Hearth
	Feature D2	Hearth
Block E	Stratum XVI	Bench
Block F	Stratum XVI	Bench
Block G	Stratum XVI	Bench
Block H	Stratum XVI	Bench

Mapping Housepit 54: Geographic Information Systems Methods

The formation of the GIS databases relied on the foundation of these field and laboratory analyses. However, to show the socioeconomic spatial organization of the household, it was necessary to emphasize certain characteristics, omit others, and include additional attributes not previously examined. The coding criteria for each line of evidence will be discussed below. While this thesis does not include a discussion of all categories, they are available for future research. Full descriptions of the coding criteria for lithic, historic, and faunal materials are available in Appendix A. To examine these relationships each artifact or specimen was assigned coordinates corresponding to x- and y-axes (Appendix A). While point plotted artifacts have a specific recorded location in HP 54 allowing the entrance of more accurate coordinates into GIS databases, more generally collected materials are given arbitrary coordinates from the center of the unit or quad from which they were recovered. Although lacking the accuracy of point-plotted items, these data still convey the spatial patterns needed to assess household hypotheses. It is also important to note that these points are not precisely connected to real locations,

so while the maps aid in identifying spatial patterns they lack the accuracy usually required in GIS applications.

This analysis stresses relationships in artifact distributions and clusters in relation to features in order to reveal boundaries between possible residential units or activity areas. Distributions display data by counts, allowing concentrations of a material type to be examined. These maps are created as x- and y-coordinates generated in ArcGIS and then imported into Quantum GIS to create a heat map. The resulting raster file is then uploaded into ArcGIS so that it can be viewed in conjunction with the features. This method is limited in that it is difficult to display two different types of data (i.e. faunal and lithic distributions) or two different characteristics of the same data type (i.e. distribution of high ranking and low ranking fauna) simultaneously; therefore to compare data it is necessary to make multiple maps. Clusters, which display artifact distributions in space through ArcGIS, are useful in examining different types of data or different characteristics of the same data type. In emphasizing spatial properties, the maps may not portray accurately the number of artifacts or specimens; therefore this method is best when looking at small sets of data such as tools, prestige items, and historic artifacts. While both distributions and clusters are limited in displaying data, together they can aid in revealing spatial boundaries between residential units or activity areas.

Lithics

Debitage. Characteristics chosen for GIS analysis include locality (Table A.5), utility (Table A.6), and size (Table A.7). Flake locality, based on material type, were included to show access to raw material sources throughout the household. Utility is defined here as the combined workability, maintainability, and quality of the material

(Wanzenried 2010). Cultural preferences for certain material types also influenced coding (Prentiss et al. 2013). Debitage size are also highlighted to reveal spatial distinctions between residential and activity areas. Although flake type according to the distinctive typology approach, the amount of cortex cover, and fraction initiation was included in the database (Table A.1), it was not utilized for this analysis.

Tools. Tool types are coded more generally than the typological categories present in previous Bridge River lithic analyses, because including too many categories would make it difficult to see spatial trends. At times these categories are further simplified (i.e. cutting implements, projectile points, and prestige items) when trying to see broader patterns (Table A.2). The level of curation observed in each artifact in terms of curated or expedient is also noted (Table A.3). Curated artifacts have received greater investment in their production and maintenance and thus have longer use lives. Less investment is present in expedient technology that arises from a situation need (Binford 1979). To query all artifact types together, faunal artifacts are also included in this database. This allows a more inclusive examination of the distribution of tool kits and prestige objects. An analysis in raw material access is possible with the mapping of the locality (Table A.5) and utility (Table A.6) of the material. Differences in these attributes may suggest socioeconomic differentiation between household members.

Fire-Cracked Rock. The GIS analysis of FCR is limited to the mapping of distributions across the units and quads. FCR is usually associated with hearths used to cook food or create warmth. After their use, FCR are often discarded into midden contexts. The analysis of FCR is therefore crucial to understanding features and their relationship with different floor plan organizations.

Heavy Fraction. Heavy fraction lithics are examined by size (Table A.7).

Differences in size may demonstrate spatial boundaries between residential units or activity areas even when larger debris has been removed due to cleaning processes.

Heavy fraction data were also added to the lithic debitage in attempting to see broader patterns in the distribution of flakes by count and size.

Historic Artifacts

The historic artifacts GIS database emphasizes artifact type (Table A.8) and material (Table A.9). Additional characteristics of beads, such as design (Table A.10), opaqueness (Table A.10), and color (Table A.12), were also included. Concentrations of these materials may reveal wealthier residents with greater trade relationships.

Fauna

The fauna database describes the available taxa and elements in addition to their utility. The utility of the taxa is assessed according to the how the species was procured (mass captured vs. hunting of individual prey) as well as their size (Table A.13)(Cannon 2002; Coddling et al. 2010). Element utility is also included into the database (Table A.15). Variable by species, the utility is determined by anatomical region or specific element. Salmonid high utility elements occur in the axial region (vertebrae, ribs, and haemal and neural spines) while low utility elements are present in the pectoral and pelvic girdles as well as the head (Butler 1993; Hoffman et al. 2000; Partlow 2006; Prentiss et al. 2012). In mammalian prey, high utility elements consist of the upper limbs, which include the femur, tibia, humerus, radio-ulna; moderate utility items include the elements of the axial skeleton, such as vertebrae, ribs, sternum, scapulae, and innominates; and low utility elements include the head and lower limbs containing

metapodials, carpals, tarsal and phalanges (Binford 1980; Church and Lyman 2003; Madrigal and Holt 2002; Marshall and Pilgram 1991; Outram 2001; Rogers and Broughton 2001). Faunal size grade is included to show variations in faunal distributions that may reflect boundaries between residential units or activity areas (Table A.16). Fracture patterns, which reflect various processing efforts and taphonomic processes, are recorded. Burn and weathering stages are also noted to reveal these relationships (Table A.17). Cultural or natural modifications, such as cut marks or carnivore gnawing, are included when present. Faunal artifacts are described with lithic tools so tool kit relationships may be examined. Heavy fraction fauna was included to see broader trends in faunal resources, though a separate database is present that allows the distribution of heavy fraction specimens by count and size to be seen. This allows an examination of faunal resources even when larger debris has been removed during cleaning processes.

Features

Features, such as the bench, middens, hearths, cache pits, and postholes, are mapped into GIS. Such features offer points of reference with which to interpret artifact and specimen concentrations and clusters. Additionally they are crucial in interpreting floor plan organizations associated with different household socioeconomic strategies.

Hypotheses, Expectations, and Testing Methods

Having described the analytic methods and coding criteria used to create the databases for GIS mapping, it is important to revisit the hypotheses and their expectations in order to demonstrate how each will be tested. A summary of the expectations is below while a more detailed description is available in Table 5.4.

Table 5.4. Hypotheses and Expectations

Socioeconomic Strategy	Floor Organization	Expectation	GIS Mapping Testing Method
<i>Network</i> Intrahousehold ranking present	Residential Units	Individual residential units with hearths, cache pits, and unique artifact distributions that occur within the bench, hearth, and central zones	Distributions by number and size of lithics and fauna corresponding to features
		Wealthy residences in southern hemisphere of house where it was warmer and lighter	Clustering of high utility fauna, large cache pits, high quality lithics, and prestige goods/exotic items in southern hemisphere
		Differential access to high utility subsistence resources such as salmon, ungulates, and other large mammals	Faunal distributions by species utility, element utility, and fracture type
		Larger surpluses reflected by greater cache pit storage capacity in wealthier residential units	Mapping and comparison of cache pits by estimated volume
		Variability in the quality, range, and distributions of raw materials and lithics between residential units	Lithic tool and debitage distributions by locality, utility, tool type, and curation
		Unequal distribution of prestige goods and exotic (non-local) items	Distributions of prestige goods/exotic items
		Possible manufacturing specialization as seen with the presence of specific toolkits in different residential units	Clustering of related tool types
<i>Corporate</i> Intrahousehold ranking absent or suppressed	Residential Units	Individual residential units with hearths, cache pits, and unique artifact distributions that occur within the bench, hearth, and central zones	Distributions by number and size of lithics and fauna corresponding to features
		Presence of shared spaces, such as central hearth zone, activity areas, and midden, corresponding to the bench, hearth, and central zones	Mapping and comparison of features
		Similar distributions of faunal resources	Faunal distributions by species utility, element utility, and fracture type
		Similar sizes in cache pit storage capacity or shared cache pits	Mapping and comparison of cache pits by estimated volume
		Less variability in the quality, range, and distributions of raw materials and lithics between residential units	Lithic tool and debitage distributions by locality, utility, tool type, and curation
	Shared Activity Areas	Prestige items, if present, are not restricted to single residential unit	Distributions of prestige goods/exotic items
		Shared activity areas and central hearth that occur within the bench, hearth, and central zones	Distributions by number and size of lithics and fauna corresponding to features
		Single or few cache pits reflecting greater sharing of faunal resources	Mapping and comparison of cache pits by estimated volume
		Variability in fauna distributions coincide with different activity areas	Faunal distributions by fracture pattern, burn stage, and weathering stage
		Differences in toolkit assemblages and debitage corresponding to different activity areas	Distributions of tool types and debitage; clustering of related tool types

Hypothesis 1: Network Socioeconomic Strategy with Intrahousehold Ranking

A network socioeconomic strategy developed by aggrandizing individuals is present, causing greater intrahousehold differentiation due to wealth and social distinctions. This ranking is evident with the presence of individual residential units with separate sleeping areas, hearths, and cache pits in addition to unique artifact distributions. The distribution of these features, artifacts, and specimens would occur within the bench, hearth, and central zones. Differences in wealth are observable with variations in high-ranking fauna and lithic resources. Greater storage capacity in cache pits between residential units would also signal such socioeconomic standings. Concentrations of prestige goods or exotic items in specific residential units would also reflect ranking.

Hypothesis 2: Corporate Socioeconomic Strategy without Intrahousehold Ranking

A corporate socioeconomic strategy with absent or suppressed intrahousehold ranking exists according to the level of collectivism or communalism present. Households with a more collectivist approach may retain the residential units that exist across the bench, hearth, and central zones that have been observed in network strategies. However, such residential units would lack significant wealth-based differentiations in faunal or lithic resources. Shared activity spaces may also be present. A more communal approach would have a floor plan organized by shared activity areas. In this organization variations in fauna and lithics would correspond to spatial boundaries between these areas. Material-wealth items or resources may be present, though they would not be restricted to a single area within the housepit.

Summary

The purpose of this research is to gain a better understanding of how socioeconomic strategies affect how household inhabitants interact and participate in production and reproduction activities. While greater intrahousehold ranking is present in network strategies, corporate strategies are marked by communalism that rejects or suppresses such wealth or prestige based inequality. Because these relationships are reflected physically in the spatial organization of the housepit, they may be approached through GIS mapping techniques that depend on the composite efforts of lithic, historic, faunal, and feature analyses. In addition to contributing to regional household archaeology, understanding these household relationships may also add to growing debates centering on the nature of regional social complexity and inequality.

CHAPTER 6 ANALYSIS AND DISCUSSION

The following are the results of GIS analyses that display distributions or clusters of lithic, historic, and faunal data in relation to features to identify possible residential units or shared activity areas that correspond to household strategies within HP 54. A network strategy marked by intrahousehold ranking is spatially manifested with residential units consisting of individual features and artifact distributions reflecting material-based wealth distinctions. The spatial organization of the corporate strategy depends on the level of communalism present. Although a more collectivist mode is reflected by the presence of residential units lacking significant wealth-based differences, a more communalist mode is seen with the presence of shared activity areas. Recognizing these strategies and their spatial signatures is crucial for understanding intrahousehold relationships and ranking. Maps produced for this analysis are available in Appendix B.

Lithic Debitage

Distribution

The distribution of lithicdebitage is greatly influenced by features (Figure 6.1). The greatest accumulation of flakes occurs in the midden, which is consistent with secondary deposits associated with cleaning and sweeping debris. Another dense area of lithics occurs near the northeast hearth. These flakes could represent lithic reduction activities located around the hearth or a discard pattern of dropped items, which are usually deposited near hearths as small elements become detached from a larger object or heavy cached items. A small concentration on the northern bench in Block C could reflect a smaller activity area. The southeast corner of the housepit has the largest area of

higher debitage accumulations, reflecting an area of intense lithic reduction. Low concentrations encircle the central hearth. Because activities would have certainly surrounded this communal feature, these low distributions could indicate the space was swept more regularly. Low distributions in the center could correlate with heavy traffic.

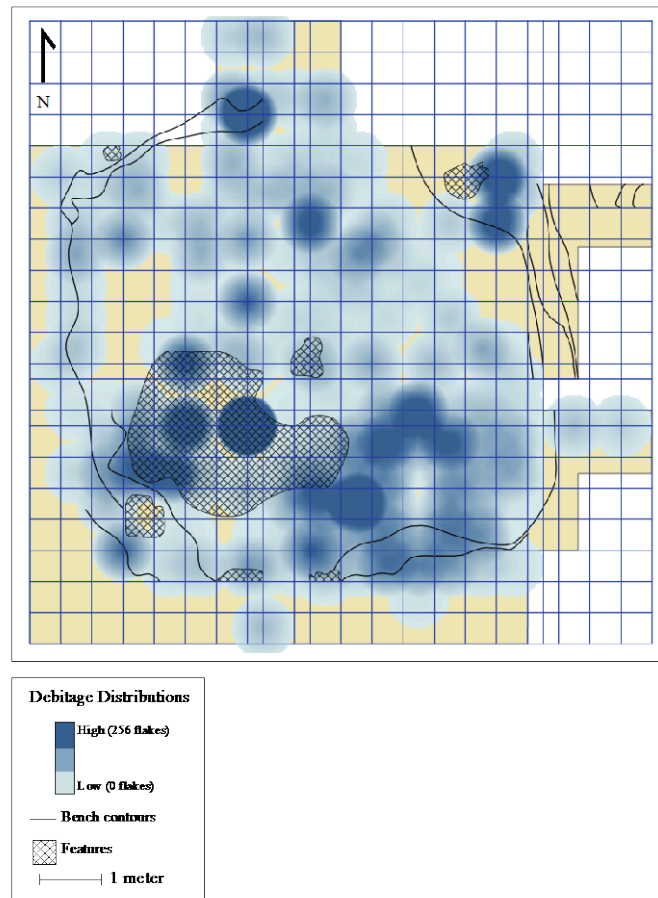


Figure 6.1. Debitage Distribution.

Size Grade

A description of debitage size distributions can aid in determining depositional patterns corresponding to spatial boundaries. Extra small flakes are concentrated in the southeast corner where they encircle a location of a lower flake distribution (Figure 6.2). High concentrations of extra small flakes are also present in the midden as a result of

cleaning processes. Two areas on the northern bench also contain high concentrations of the debitage size grade: the northeast corner of Block C and by the northeast hearth (Feature D2). Similar distributions of small flakes occur throughout the housepit with concentrations in the southeast, the midden, and along the northern bench (Figure 6.3). A wider distribution of small flakes occurs in the northwest corner of Block C. While the distribution of medium-sized flakes is similar to extra small and small flakes in that the highest concentrations occur in the southeast corner, midden, and northeast hearth, their distribution differs with higher proportions along the southern bench (Figure 6.4). The arrangement of medium flakes along the length of the bench could be due to larger debris being swept along the bench. More isolated concentrations along the northern bench, however, could be due to production activities.

Large flakes, which are much less numerous than the previous size grades, are dominant in the midden and southeast corner (Figure 6.5). A high concentration is present between Blocks C and D. The distribution of these flakes could reflect boundaries between activity areas in these blocks. Because large debris concentrates around structural features, this distribution could also represent the base of the roof ladder. Only two extra large flakes are present, both of which were recovered in the midden. While high accumulations of each size grade occurred within the same regions, notably the midden and southeast corner of the housepit, slight spatial differentiations do reflect additional depositional processes (Figure 6.6). Medium and large flakes seem to accumulate along structural features or between possible activity areas while smaller flakes occur throughout the floor context.

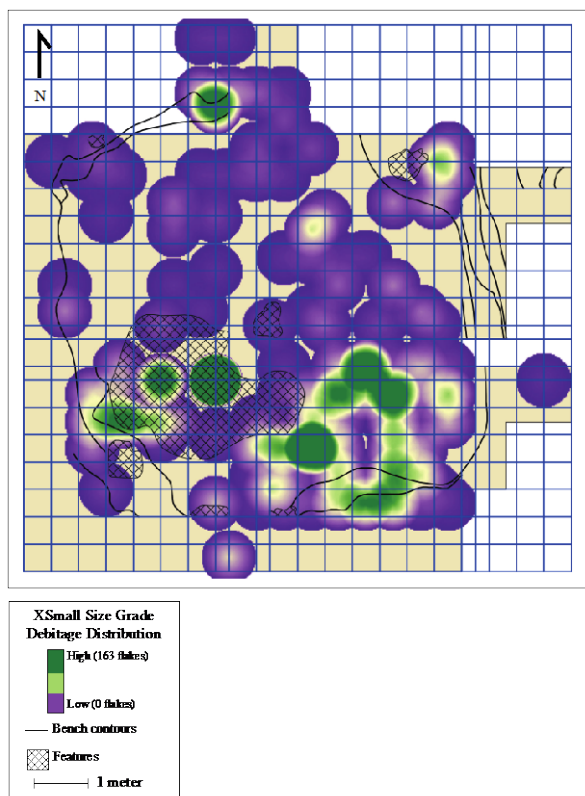


Figure 6.2. Debitage Distribution by Size Grade Xsmall.

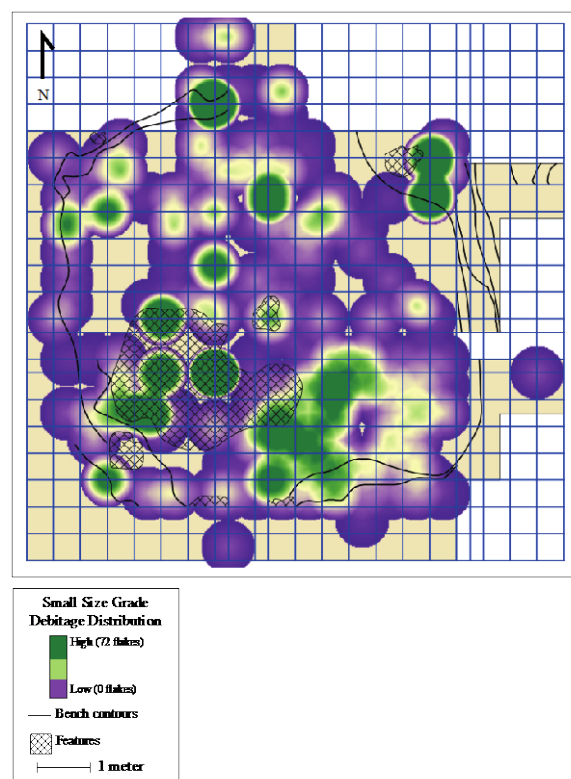


Figure 6.3. Debitage Distribution by Size Grade Small.

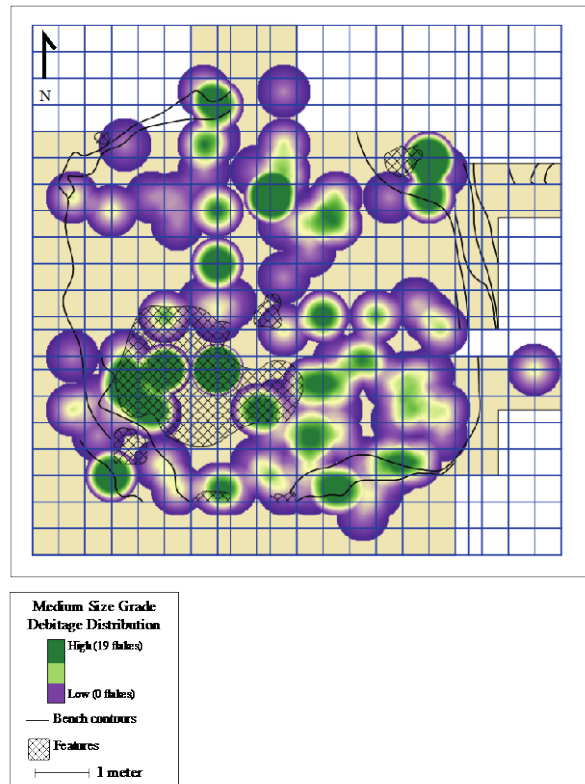


Figure 6.4. Debitage Distribution by Size Grade Medium.

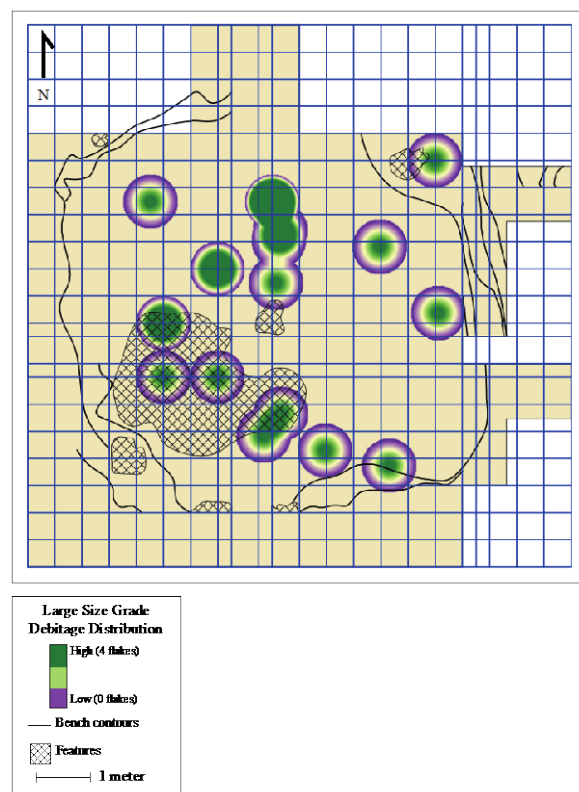


Figure 6.5. Debitage Distribution by Size Grade Large.

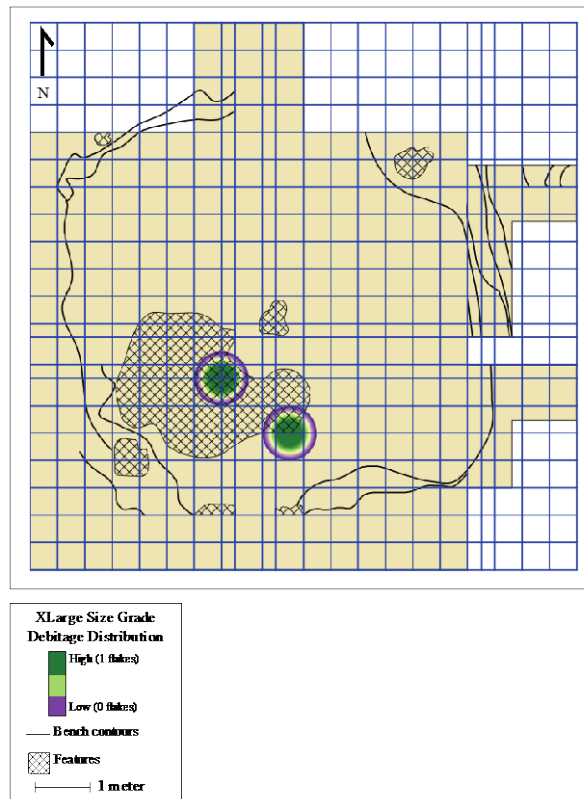


Figure 6.6. Debitage Distribution by Size Grade Xlarge.

Locality

Flake locality can reveal differences in resource access and thus interhousehold ranking; however, distributions of local (Figure 6.7), non-local (Figure 6.8), and unknown locality debris (Figure 6.9) concentrate within the same regions, albeit in different amounts. Distributions of each type are highest in the midden and southeast corner. Local flakes are the most numerous and have a wide distribution throughout the housepit. Non-local flakes have a higher distribution within the northwest corner though a smaller concentration also occurs by the northeast hearth. Similar distributions of

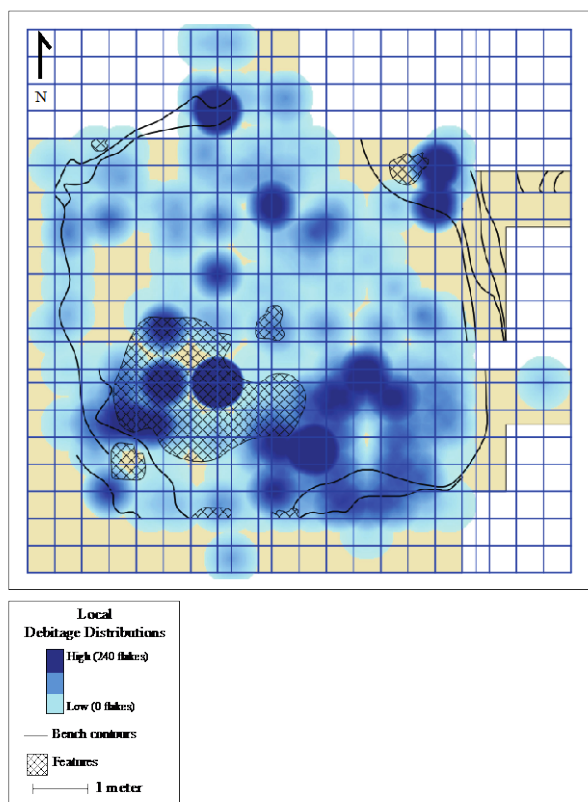


Figure 6.7. Debitage Distribution by Locality – Local.

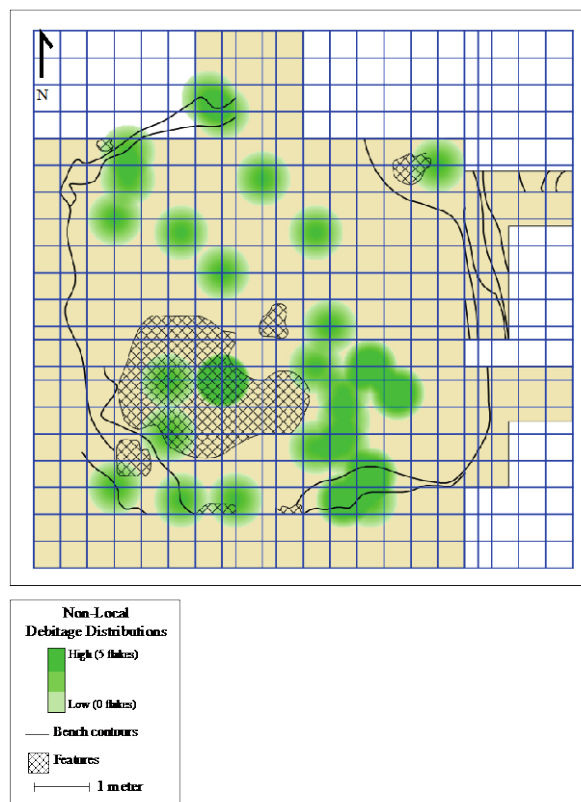


Figure 6.8. Debitage Distribution by Locality – Non-local.

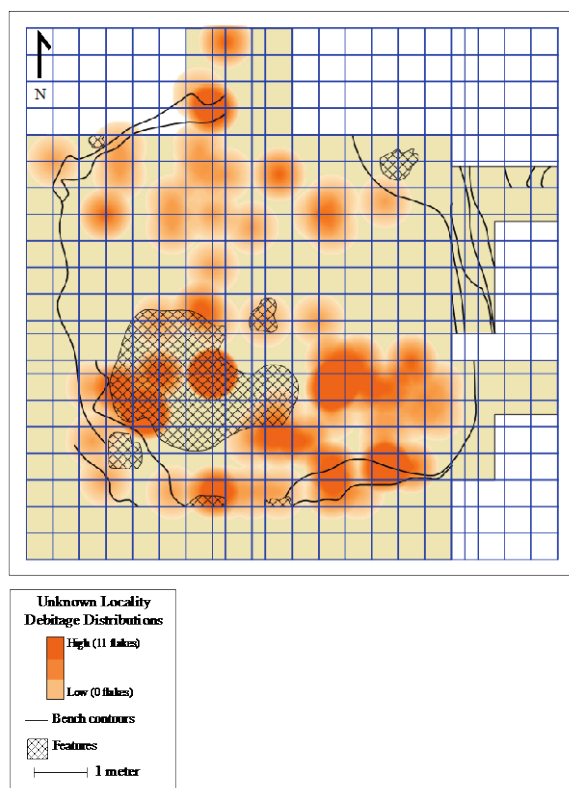


Figure 6.9. Debitage Distribution by Locality – Unknown.

unknown locality flakes are present in the northern hemisphere of the housepit. Rather than reflecting differential resources access, the distribution of flakes by locality type reveals differences in depositional processes and uses of space. The high concentration of all flake locality types in the southeast corner suggests it is an activity area where a variety of material types were worked. Higher proportions of flakes in the midden reflect secondary deposits.

Utility

Concentrations of high utility lithic materials may reveal certain individuals had differential resource access due to wealth-based differences; however, a more dispersed distribution of high utility debitage or clusters of all utility types in a single location reflects such intrahousehold ranking is absent or suppressed. Concentrations of high (Figure 6.10), medium (Figure 6.11), and low utility debitage (Figure 6.12), however, occur within the same location, the southeast corner of the housepit. Rather than suggesting differential access to resources, these distributions reflect an activity area in which different material types were used. Concentrations of each utility type are also present in the midden, which is consistent with dumped secondary deposits. Both high and medium utility flakes have a wider distribution that stretches into the northern hemisphere of the housepit while low utility flakes are limited to the southern hemisphere. Higher concentrations of high and medium utility flakes are present in the northeast corner of Block C and near the northeast hearth. Greater distributions of these materials also occur along the southern bench.

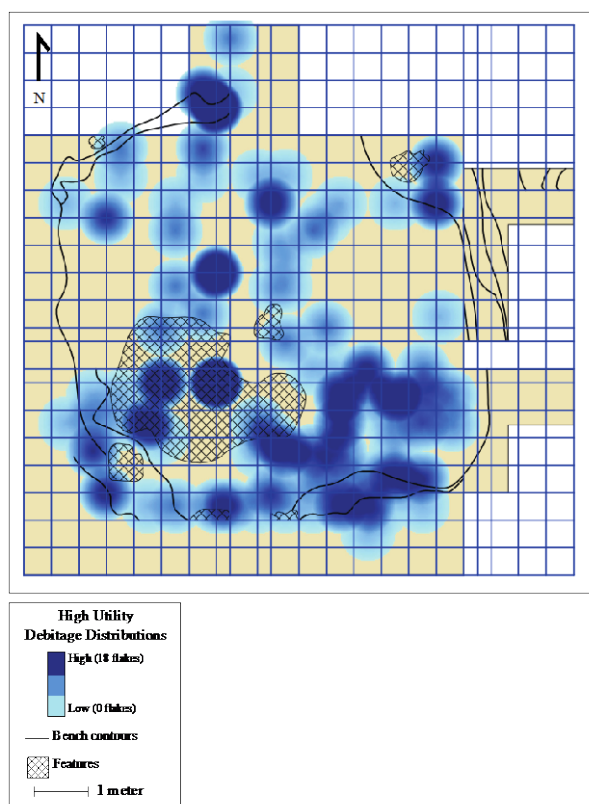


Figure 6.10. Debitage Distribution by Utility – High.

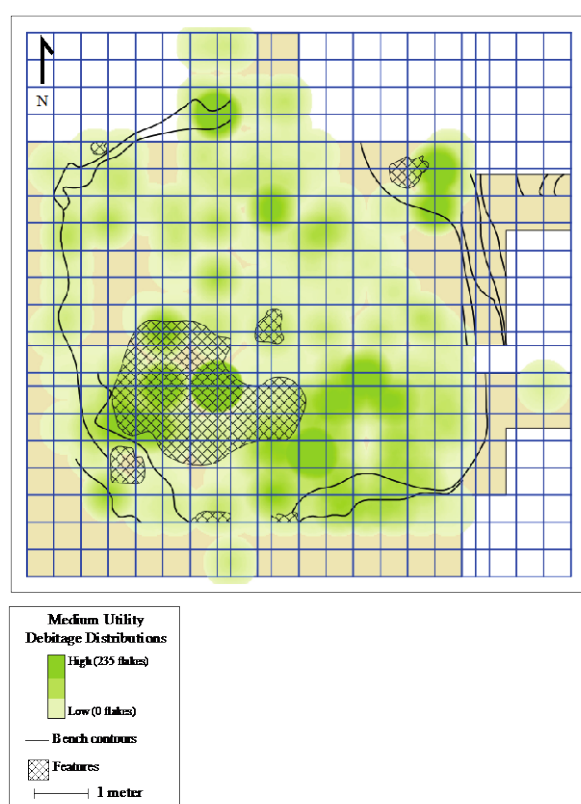


Figure 6.11. Debitage Distribution by Utility – Medium.

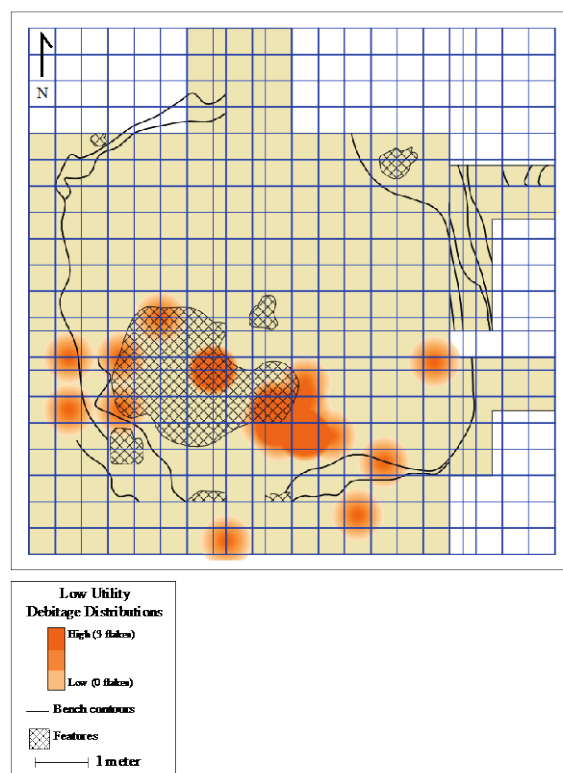


Figure 6.12. Debitage Distribution by Utility – Low.

Tools and Cores

Distribution

Tool distribution is influenced by features. The most dense distributions are located within the midden, the southeast corner, and north central area between Blocks C and D (Figure 6.13). While the midden concentration is consistent with discard practices, the other dense distributions are indicative of activity areas. Smaller accumulations occur near features, such as the cache pit, the northeast hearth, and the post hole in block C. These distributions near features and structural aspects of the housepit are consistent with the artifacts being positioning items stored for future use. The central zone of the housepit contains low tool distributions. This may reflect that the area surrounding the central hearth was cleaned more often or kept open for communal uses. Instead of suggesting individual tool clusters tied to residential units, the distribution of tools indicates the presence of shared activity spaces.

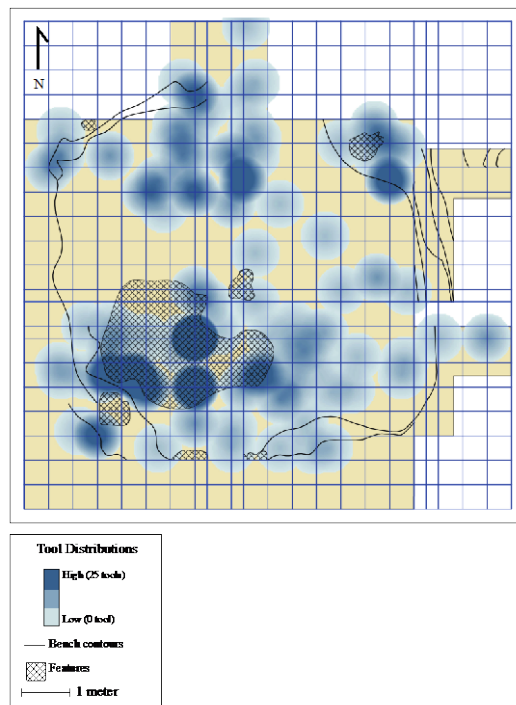


Figure 6.13. Tool and Core Distribution.

Tool Type

Clusters of tool types (Figure 6.14) and cores (Figure 6.15) can reveal tool kits that correspond to residential units or activity area. Scrapers are the most abundant tool type. Dense clusters of scrapers occur in the southeast corner and near or in the midden.

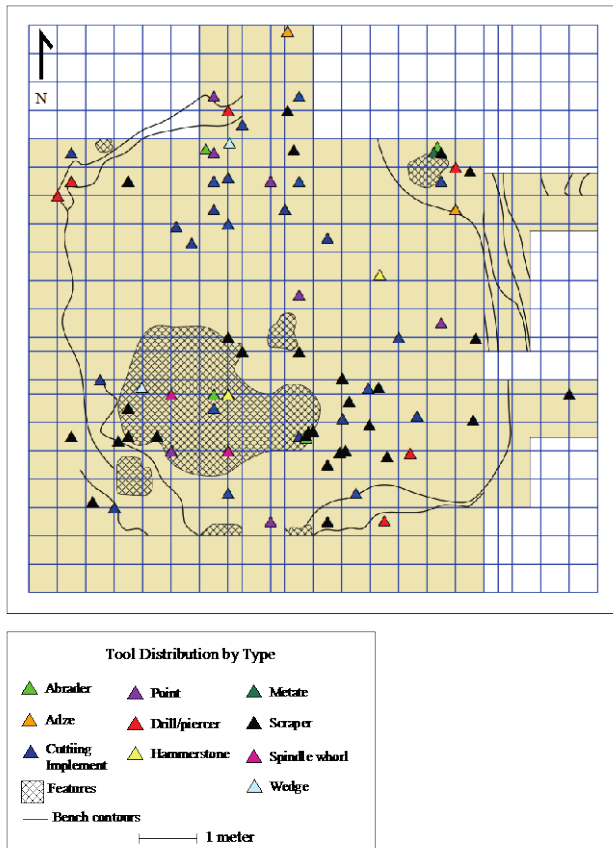


Figure 6.14. Tool Distribution by Type.

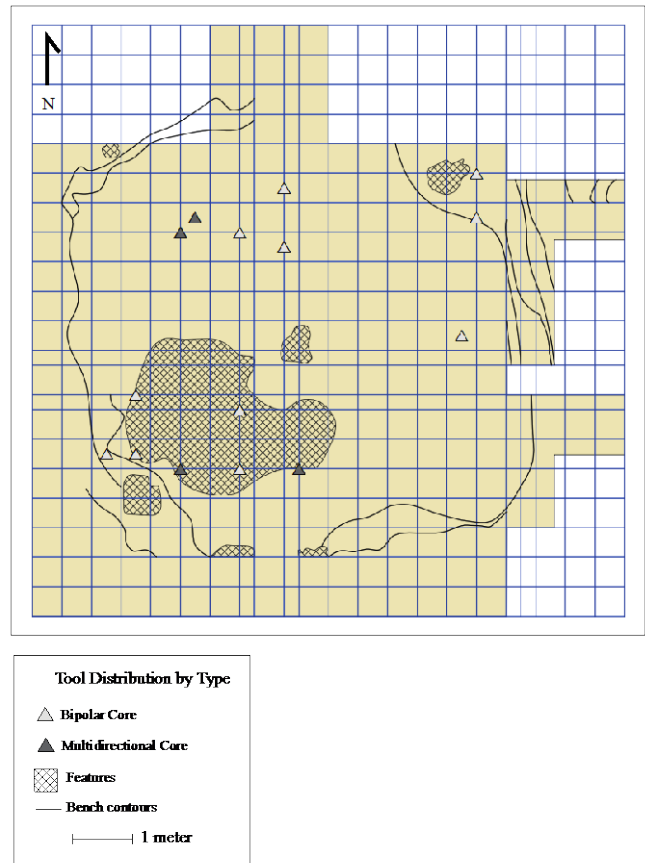


Figure 6.15. Core Distribution.

Cutting implements (knives, blades, bifaces, and flakes), the second most numerous tool type, are present in three dominant clusters: in the midden, the southeast corner, and the region between Blocks C and D. Drills and piercers have a similar distribution, though one cluster is more isolated to the western bench of Block C. Clusters of projectile points occur within the midden and within the areas between Blocks C and D. Cores occur in

two clusters: in the midden and within the northeast corner of Block C. While exhausted cores may have been dumped in the midden, the concentration of cores in Block C corresponds to a moderate density of debitage, suggesting it is a possible activity area of lithic reduction. The adze, abrader, hammerstone, metate, and wedge tool types occur less frequently and are largely restricted to the midden or northeast hearth. Spindle whorls are exclusively present in the midden.

In looking at various tool types simultaneously, several additional patterns appear. The southeast corner contains a high distribution of scrapers, cutting implements, and drills/piercers. The midden contains a wider distribution of tool types. Instead of representing an activity area, the presence of diverse tool types in this location signifies that they were discarded. While a similar wide array of tool types is present around the northeast hearth, the cluster seems to represent a more general tool kit. A high distribution of cutting implements, projectile points, and scrapers is present between the Blocks C and D, reflecting a possible activity area. A small cluster of drills/piercers, knives, and scrapers surround the post hole in Block C. The distinct tool type clusters suggest the presence of several shared activity areas. The central hearth region, however, contains fewer and less diverse tools. The dearth of tools suggests that it was relatively open space used for communal purposes.

Locality

Tool locality can reveal differences in resource access associated with intrahousehold ranking. The predominance of local lithic materials (Figure 6.16), however, suggests that such wealth-based distinctions are absent. Only a single non-local material tool is present, which was recovered from the midden (Figure 6.17). Several

tools of ambiguous locality are present, though they are more widely dispersed between the midden and Block D (Figure 6.18). The lack of greater material diversity throughout the housepit does not suggest differential lithic resource access.

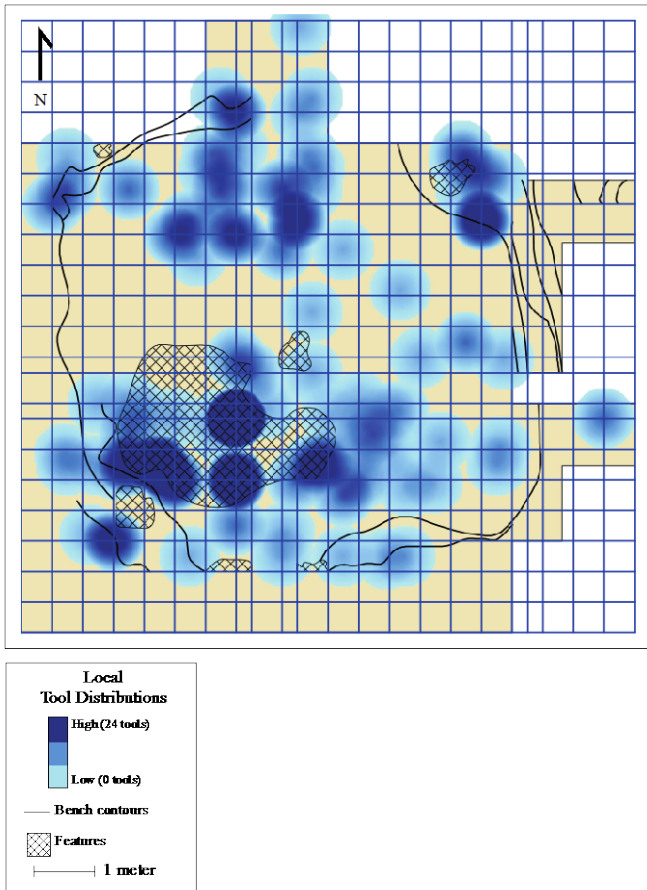


Figure 6.16. Tool Distribution by Locality – Local.

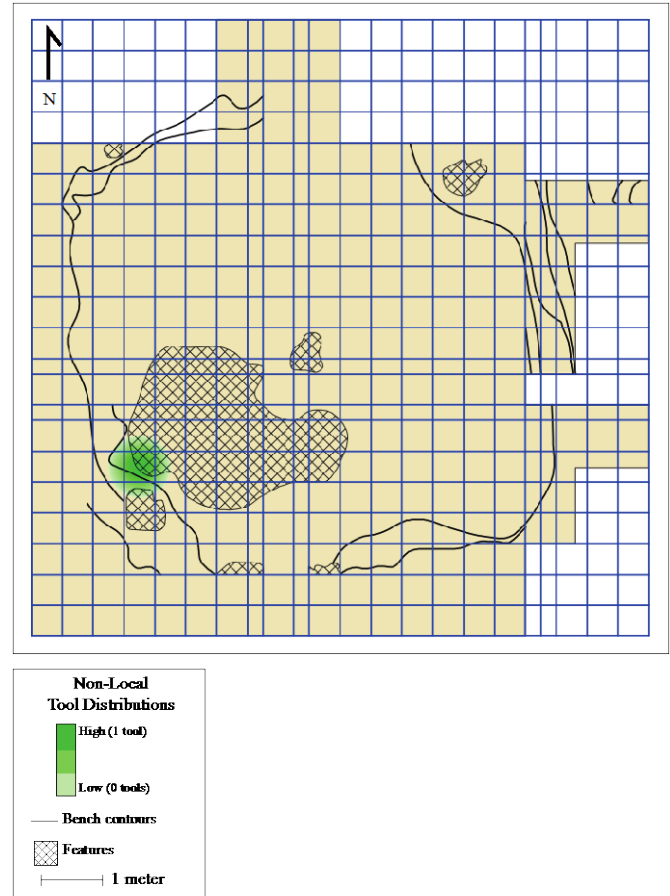


Figure 6.17. Tool Distribution by Locality – Non-local.

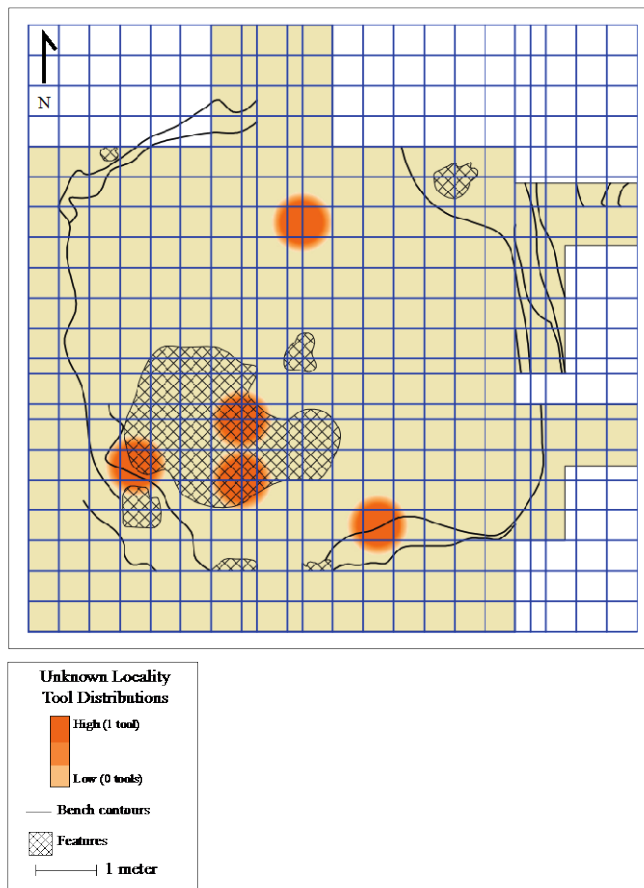


Figure 6.18. Tool Distribution by Locality – Unknown.

Utility

Material utility can be another indicator of wealth-based distinctions in that more workable materials are considered more valuable. High utility tools are the most wide spread with greater concentrations in the southern hemisphere in the midden and southeast corner, though clusters also occur near the northeast hearth and near the intersection of Blocks C and D (Figure 6.19). Medium utility tools are more abundant and they occur in denser concentrations than high utility tools (Figure 6.20). While they are densely distributed in the southern hemisphere near the midden, they are less concentrated within the southeast corner. Accumulations are also present near the

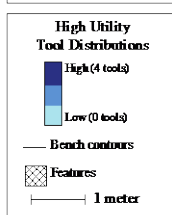
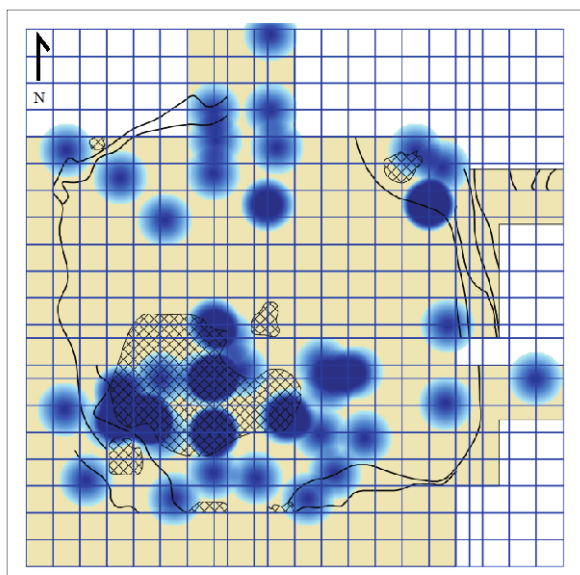


Figure 6.19. Tool Distribution by Utility – High.

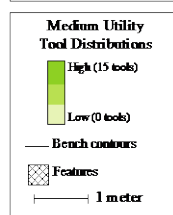
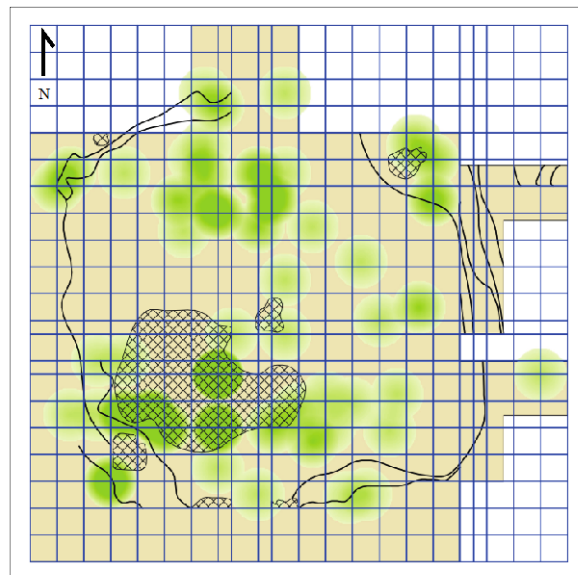


Figure 6.20. Tool Distribution by Utility – Medium.

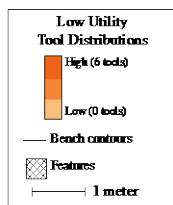
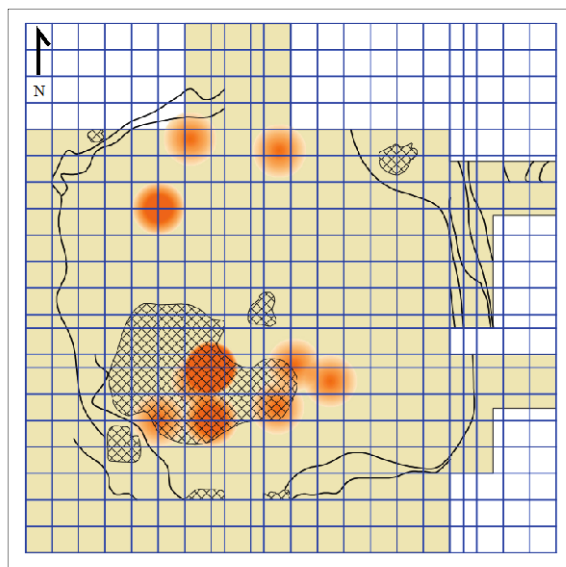


Figure 6.21. Tool Distribution by Utility – Low.

northeast hearth and within Block C. Low utility tools are more restricted to the midden though several low utility recovered in the northern portion of Block C (Figure 6.21). Because of the infrequency of low utility tools and the similar distribution of high and medium utility tools, differential resource access does not seem to exist.

Curation

The level of curation seen in a tool assemblage can reflect the nature of the activity areas in which they were used or wealth-based disparities in the number of more labor intensive formal tools. Formal (Figure 6.22) and expedient tools (Figure 6.23) occur in similar distributions with higher accumulations near the midden, southeast corner, northeast hearth, and the northwest corner of Block C. A slightly higher accumulation of formal tools relative to expedient tools around the northeast hearth and benches may

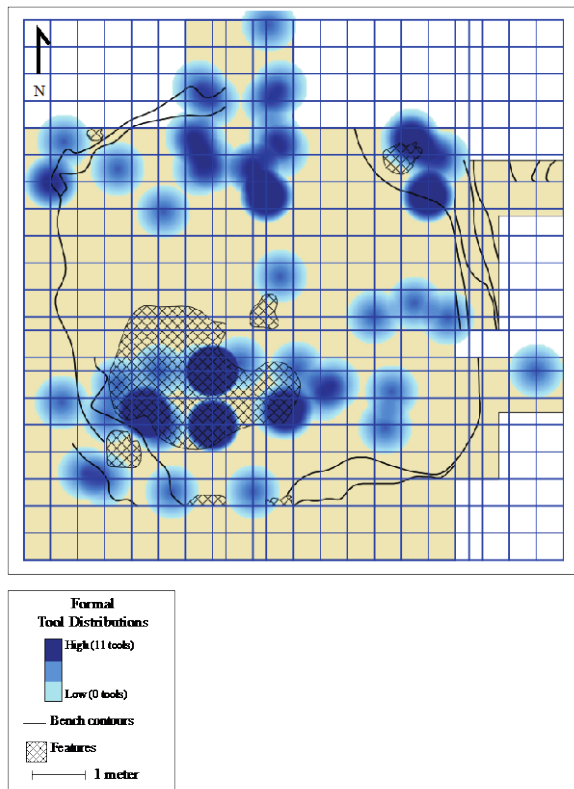


Figure 6.22. Tool Distribution by Curation – Formal.



Figure 6.23. Tool Distribution by Curation – Expedient.

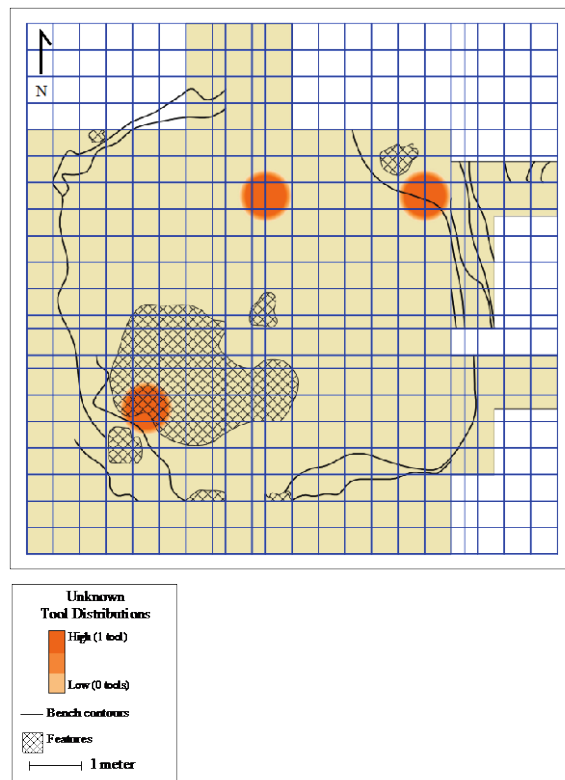


Figure 6.24. Tool Distribution by Curation – Unknown.

reflect positioning items stored out of the way for their protection. Only three tools of unknown curation occur, and they are more widely dispersed throughout the housepit (Figure 6.23). The similarity in the number and distribution of formal and expedient tools suggests wealth differences in terms of tool curation did not exist.

Fire-Cracked Rock

The distribution of FCR is strongly related to features (Figure 6.25). The central hearth is associated with very low accumulations of FCR; however the deep extent of oxidized soils associated with the hearth indicate that the feature was utilized frequently. FCR is also rather sparse within the centers of Blocks B, C, and D. The lack of FCR in

the center of the housepit is consistent with this space being used communally for activities or receiving heavy traffic. These patterns suggest that the central hearth and its surrounding space were maintained through the removal of refuse. This pattern is consistent with the very high FCR concentrations present in the nearby midden. A moderate concentration of FCR is also present along the midden's southwest margin near the cache pit (Feature A1). Moderate distributions occur along the benches where such

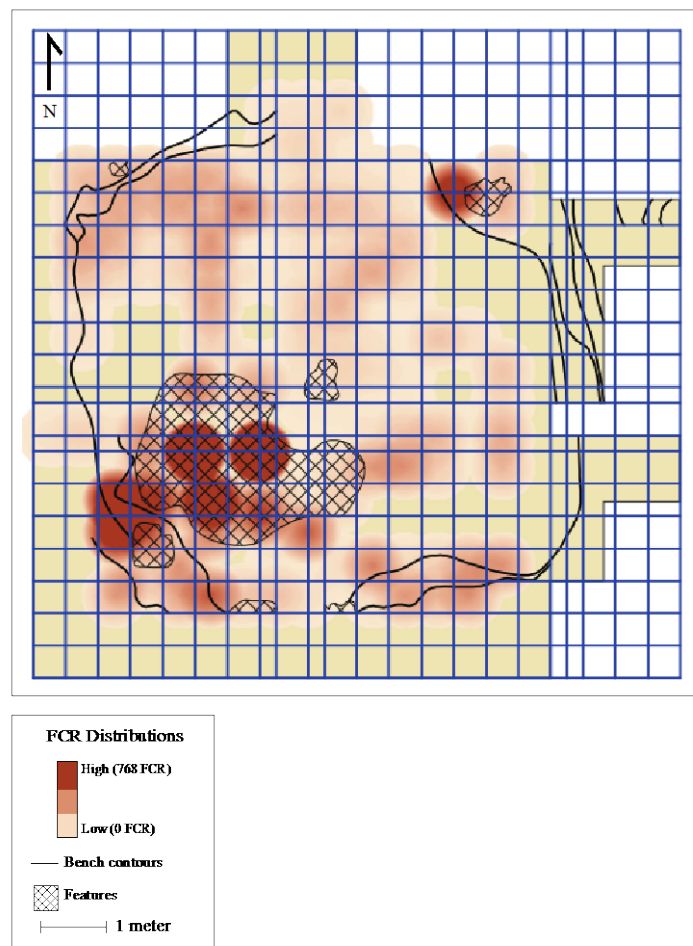


Figure 6.25. FCR Distribution.

debris may have been swept out of the way. The northeast hearth also contains a relatively high proportion of FCR, suggesting a lack of cleaning processes associated

with the central hearth. This distribution in conjunction with the lack of soil oxidation suggests that the northeast hearth had a relatively short use life.

Heavy Fraction Debitage

Distribution

The distribution ofdebitage recovered from heavy fractions can reveal spatial patterns even when larger debris has been removed. Heavy fractiondebitage distributions are strongly related to features (Feature 6.26). High concentrations are present in the midden and the cache pit. Hearths also contain large accumulations ofdebitage. Their distribution could signify they are dropped items, which tend to occur near or in hearths. The moderate distribution surrounding the central hearth correlate with relatively low distributions of generaldebitage and tools, signifying that while lithic reduction occurred around the hearth, larger debris was discarded. High concentrations ofdebitage are also present within the southeast and northwest corners. The accumulation in the southeast corner corresponds to concentrations in generaldebitage, which reveals the area was used more intensely for lithic reduction than other areas of the housepit. Areas of low heavy fractiondebitage are present within the southern portion of Block C and the western half of Block D, suggesting that lithic reduction did not occur in theses areas. The accumulation of these flakes near features is consistent with depositional patterns observed in archaeological descriptions of houses along the coast and within the interior (Hayden and Handly 2000; Samuels 1989, 2006).

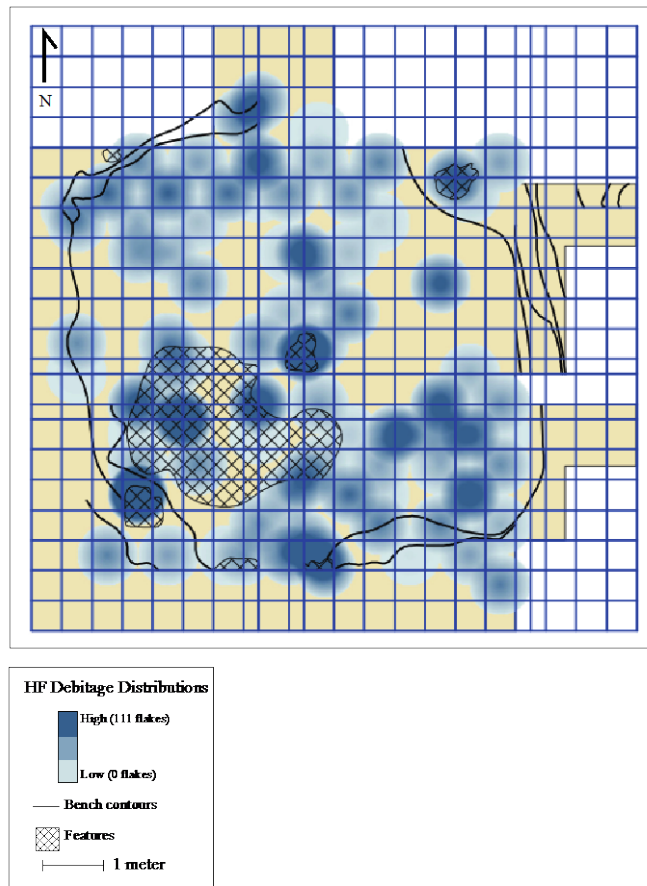


Figure 6.26. Heavy Fraction Debitage Distribution.

Size Grade

An examination of heavy fraction debitage by size grade can reveal more detailed patterns than those visible by only their general distribution. Extra small flakes are the most numerous and have a wide distribution throughout the housepit (Figure 6.27). Dense distributions occur within the southeast corner, the northwest corner, the Block B pit feature, and the hearths. Small flakes are more isolated to features, including the midden, cache pit, pit features, and hearths (Figure 6.28). A concentration is also located along the northern bench in Block C. Medium flakes occur much less frequently (Figure 6.29). The greatest concentration is present along the northern bench in Block C as well as in the

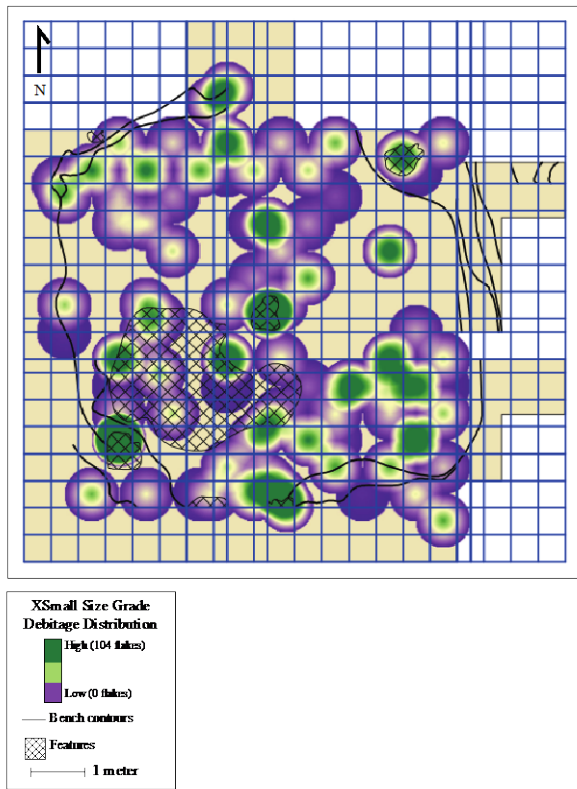


Figure 6.27. Heavy Fraction Debitage Distribution by Size Grade Xsmall.

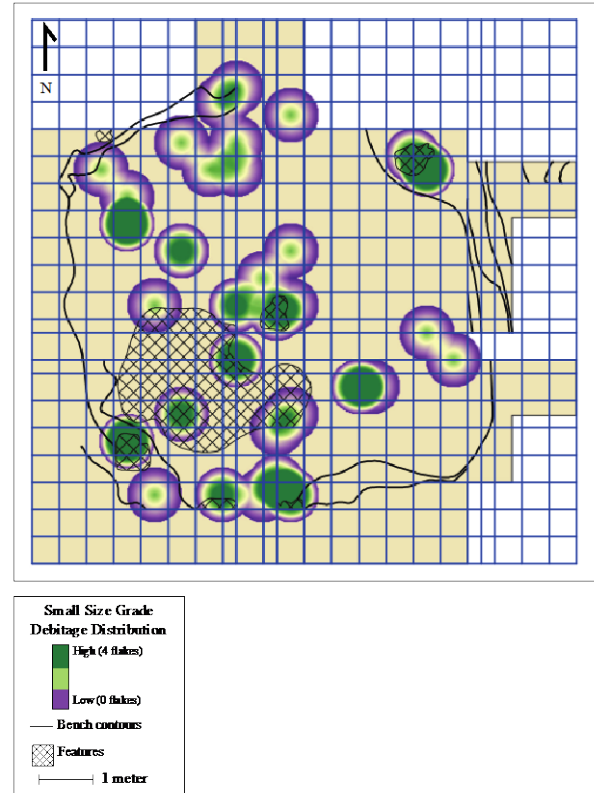


Figure 6.28. Heavy Fraction Debitage Distribution by Size Grade Small.

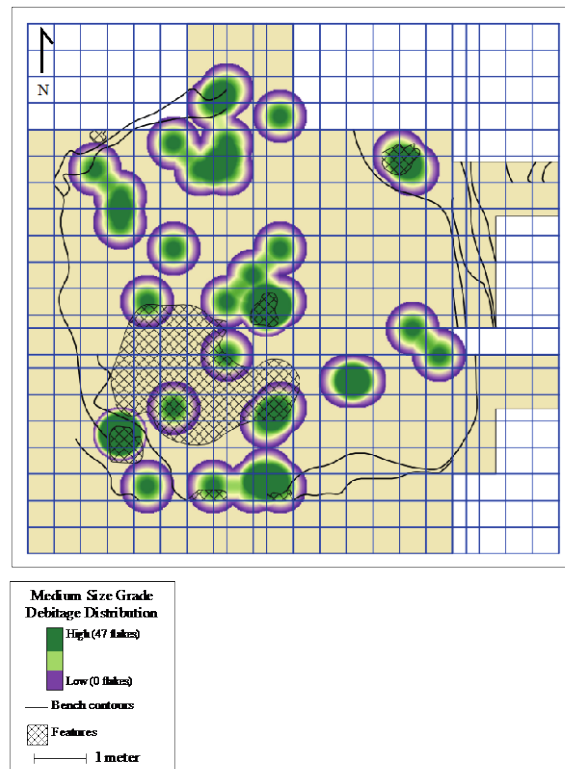


Figure 6.29. Heavy Fraction Debitage Distribution by Size Grade Medium.

midden, cache pit, and hearths. As the size grades become smaller, the amount of debitage decreases and its distribution is more restricted to the bench zone.

Historic Artifacts and Prestige Objects

Clusters of prestige and exotic items is consistent with a communalist mode of a corporate household strategy in which wealth is present throughout different living spaces but not in greatly differing amounts, reflecting suppressed material-based wealth distinctions. The greatest concentration of prestige items is in the southeast corner of the housepit in Block B (Figure 6.30). This region contains the highest distribution of non-local lithic debitage as well as historic metal fragments. Five beads, two historic glass, two bone, and one steatite, are also present. The northeast cluster contains several non-local debitage flakes, a steatite bead, and two pipe fragments. The northwest corner contains the second highest distribution of non-local lithic materials as well as two historic glass beads. A number of prestige artifacts are also associated with the midden, including non-local lithic materials, historic glass beads, a pipe fragment, and most notably a steatite figurine depicting a female infant. The location of these artifacts may signify that they were discarded or lost. These four clusters of prestige and exotic items suggest wealth-based distinctions and intrahousehold ranking did not occur. While differences in the types and amounts of prestige artifacts between these areas are present, their distribution throughout the housepit implies that significant wealth-based divisions were not present.

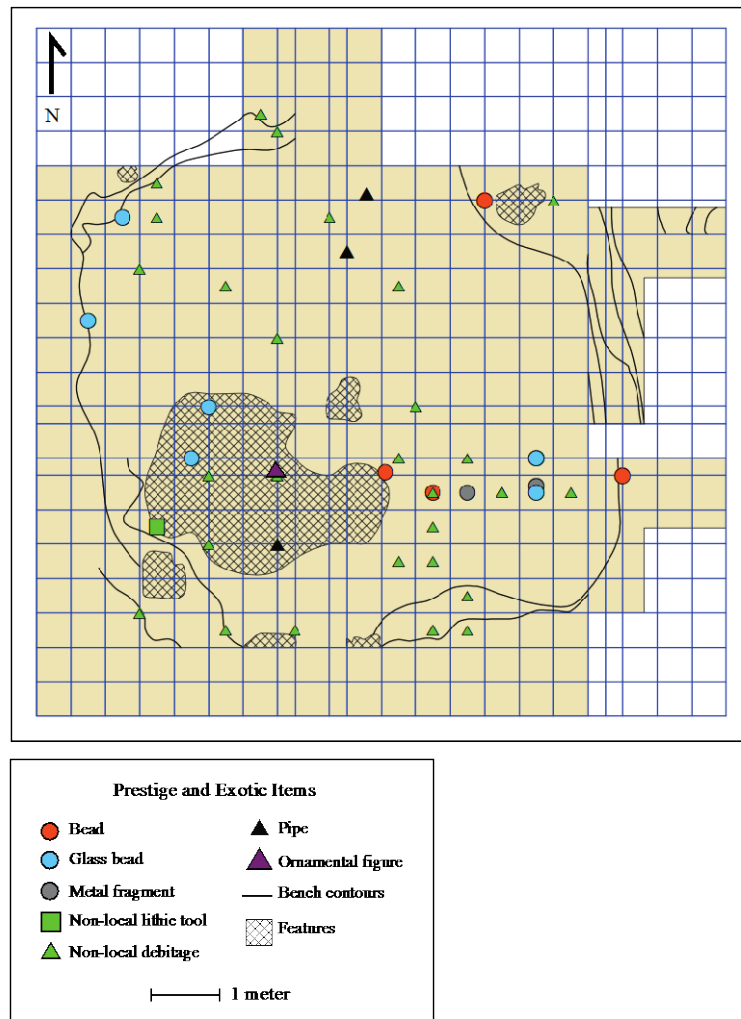


Figure 6.30. Prestige and Exotic Item Distribution.

Fauna

Distribution

The distribution of fauna is strongly correlated with features (Figure 6.31). The highest accumulations are associated with the central hearth, which is consistent with its communal use to prepare food. However, this pattern may have also been influenced by discard practices. The relatively low distributions of fauna around the hearth could also indicate that faunal materials were swept towards the central hearth as a means of

disposing debris by burning. Moderately high concentrations are also associated northeast hearth, which is consistent with its short term cooking function. The distribution of fauna both in and around the feature indicates that it did not experience the same cleaning processes as the central hearth. The northern bench also contains a moderate distribution of fauna. The midden also contains relatively high proportions of faunal specimens, which is consistent with its use for depositing refuse.

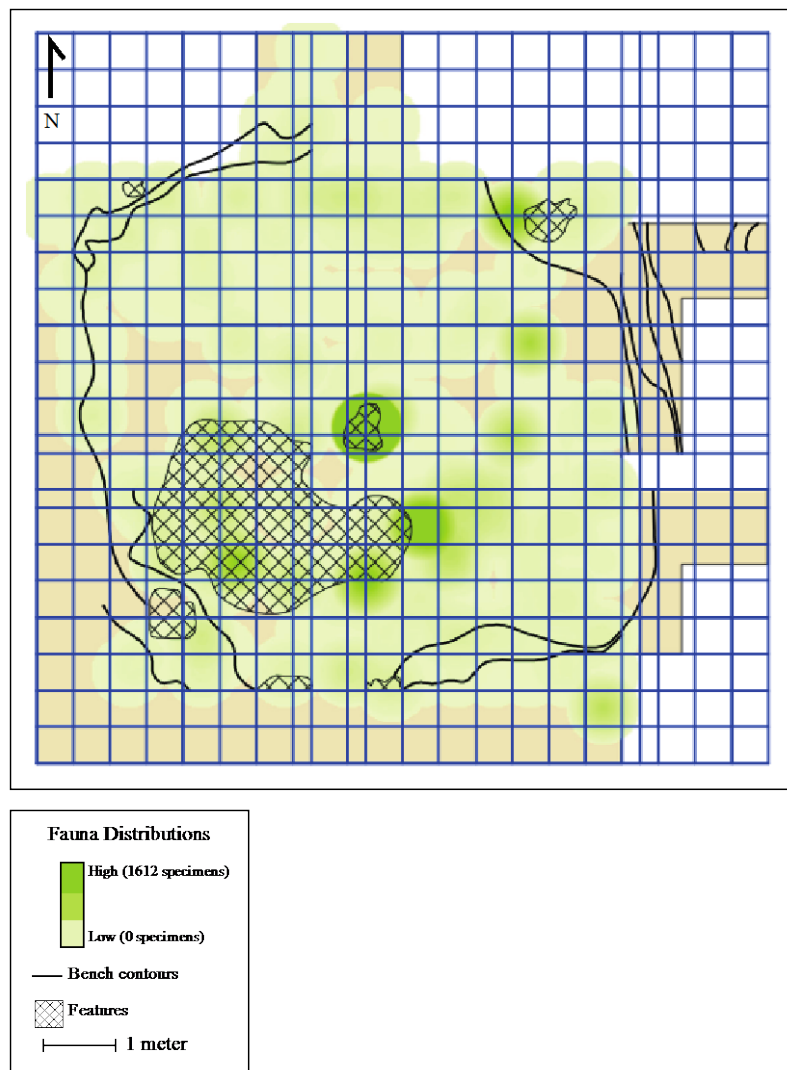


Figure 6.31. Fauna Distribution.

Size Grade

Examining fauna distributions by size grade can aid in determining depositional patterns corresponding to spatial boundaries. Xxsmall faunal specimens have the widest distribution throughout the housepit, though several dense locations exist (Figure 6.32). The highest accumulations are present within and near the midden, which is consistent with secondary dumped deposits. Greater concentrations also occur within the two hearths in Block D. The central hearth contains the highest number of xxsmall fragments, which is consistent with its cooking function; such small fragments are most often created through additional processing efforts to render bone grease from mammals. While the distribution in the central hearth is more limited to the confines of the feature, the moderately high densities associated with the northeast hearth occur both around its borders, suggesting that the feature was not regularly maintained like the central hearth. Greater distributions of xsmall fragments are present within the southern hemisphere of the housepit, with higher concentrations in and around the midden (Figure 6.33). Isolated concentrations are also along the northern bench, albeit in lesser densities. Large distributions of small fragments are associated with midden as well as the pit features (Figure 6.34). Higher accumulations also occur along the northern bench and northeast hearth.

Medium faunal fragments are less numerous than smaller size grades. The highest distributions are associated with midden and the cache pit (Figure 6.35). Higher accumulations also occur near the Block C post hole and northeast hearth. Isolated concentrations occur within the centers of Blocks B, C, and D. Large specimens tend to accumulate near and within the midden though several isolated locates occur within

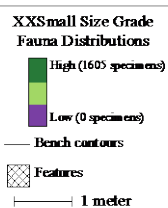
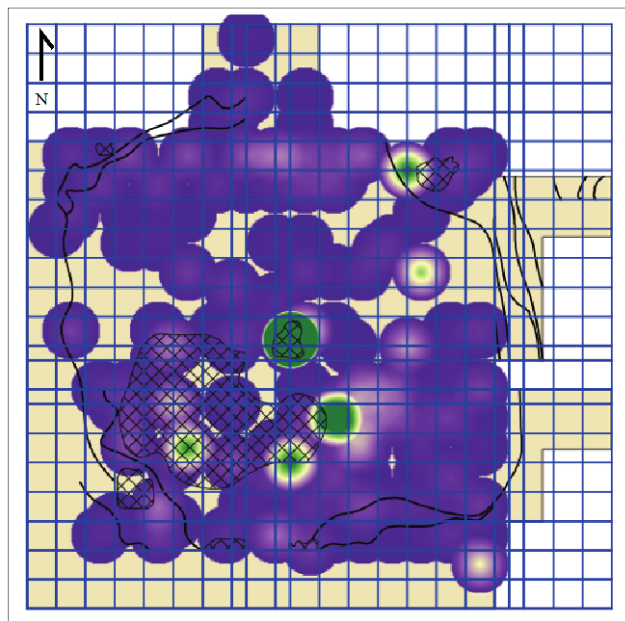


Figure 6.32. Fauna Distribution by Size Grade Xxsmall.

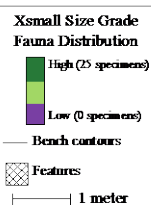
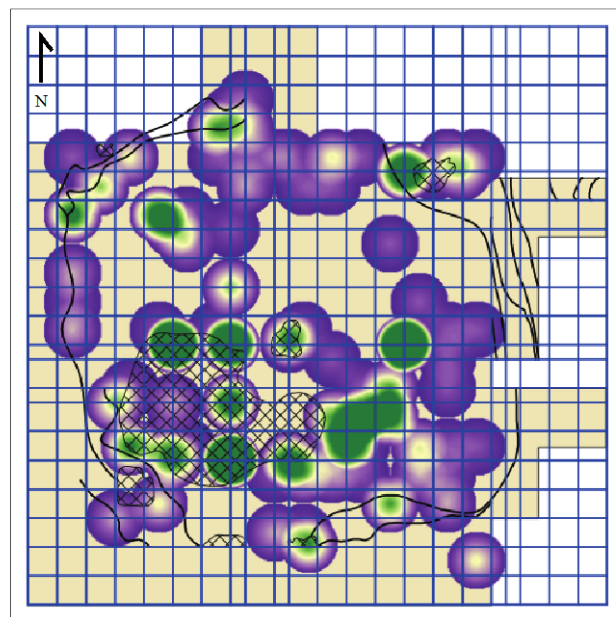
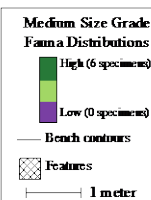
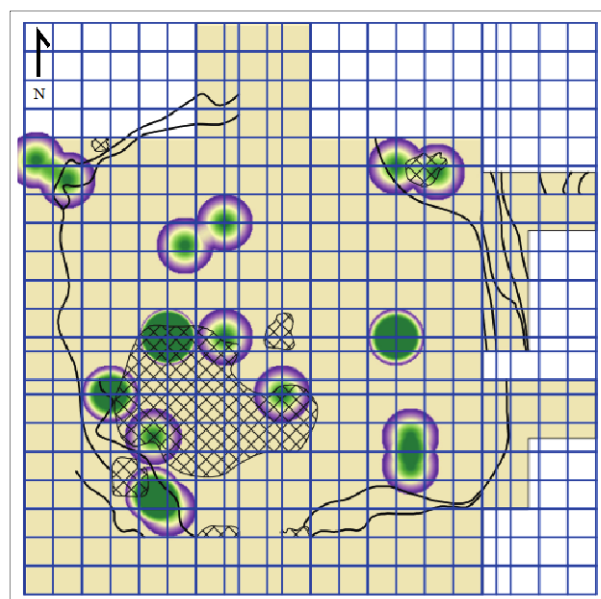
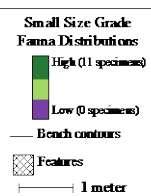
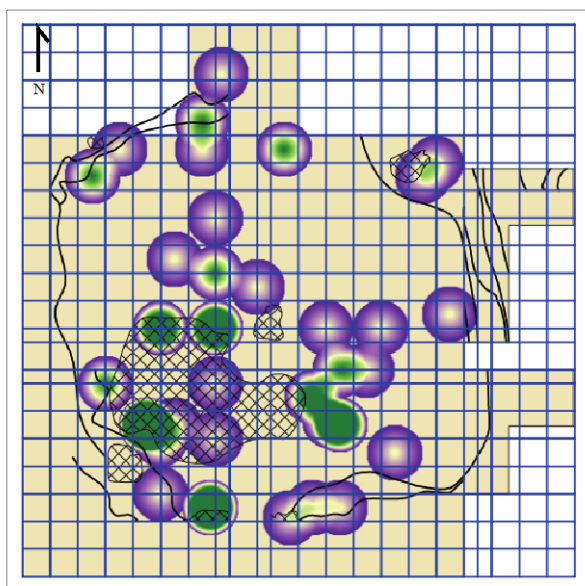


Figure 6.33. Fauna Distribution by Size Grade Xsmall.



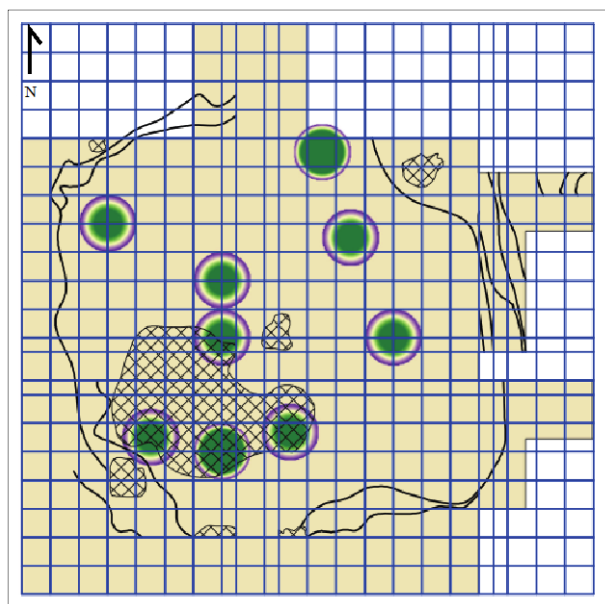


Figure 6.36. Fauna Distribution by Size Grade Large.

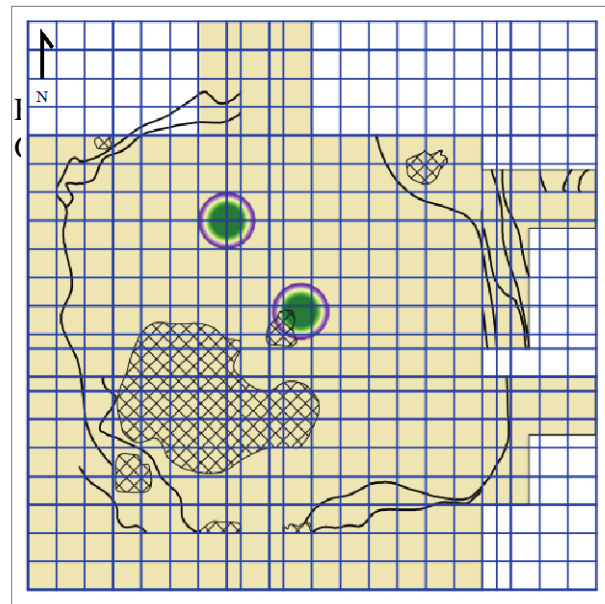


Figure 6.37. Fauna Distribution by Size Grade Xlarge.

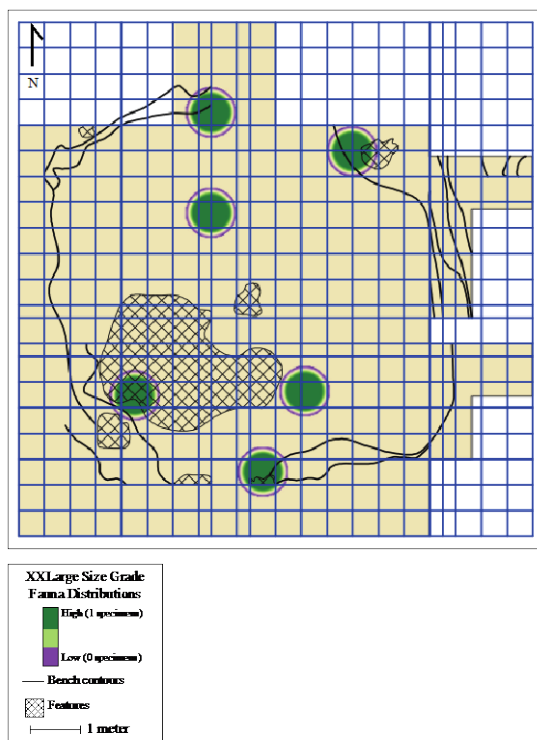


Figure 6.38. Fauna Distribution by Size Grade Xxlarge.

Blocks C and D (Figure 6.36). Only two xlarge fauna are present, one near the central hearth and the other within Block C's center (Figure 6.37). Xxlarge fauna occur rarely and are predominately distributed along the bench where material is often swept aside (Figure 6.38). These patterns indicate that the distribution of fauna size grades is most dependent on features; while accumulations within the midden and central hearth indicate intentional discard practices, those that occur along the bench or post holes may have developed due to the lower rate of traffic they received.

Fracture Type

Fracture type can indicate the level of processing or taphonomic processes the faunal materials experienced. Irregular fractures occur most frequently, and especially within the hearths and midden (Figure 6.39). This fracture type often occurs as the result of intense processing in attempts to extract bone grease; therefore the high concentrations of this fracture type within the hearth and midden reveal a pattern of processing and discard of exhausted remains. Moderate concentrations of irregular fractures near the northeast hearth suggest similar processing practices, albeit in lower concentrations. Moderate distributions are also present in an arc formation stretching between the southeast and northeast corners. This pattern surrounding the hearth may reveal areas in which faunal remains were heavily fragmented. However, this pattern may additionally correlated with an area of high traffic that is adjacent to the side entrance.

Oblique (Figure 6.40) and spiral features (Figure 6.41), which are often initiated when extracting bone marrow and grease, occur most frequently within the midden. The presence of oblique fractures along the northern bench may indicate it also served as an area of faunal processing. Transverse fractures, which often occur in less fresh bone due

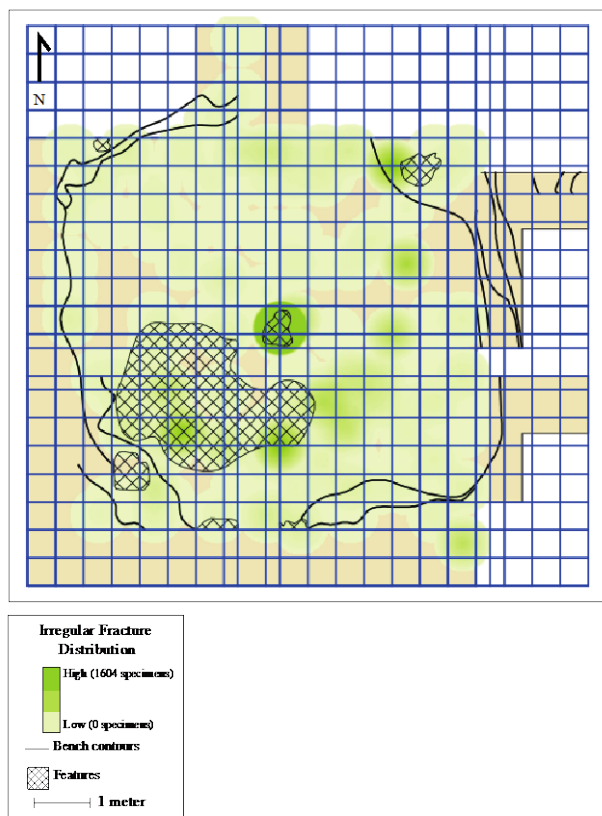


Figure 6.39. Fauna Distribution by Fracture Type – Irregular.



Figure 6.40. Fauna Distribution by Fracture Type – Oblique.

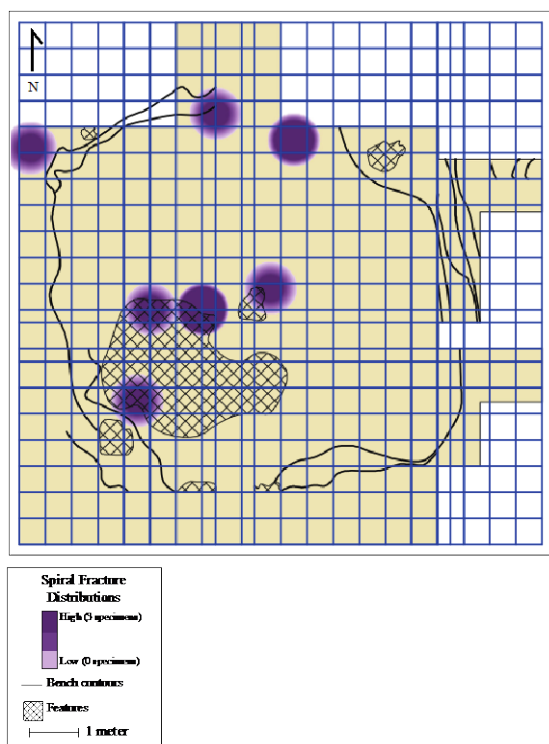


Figure 6.41. Fauna Distribution by Fracture Type – Spiral.

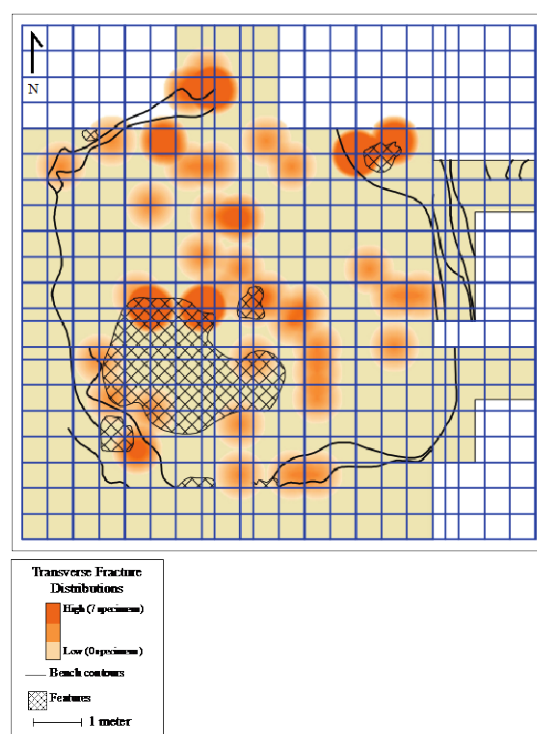


Figure 6.42. Fauna Distribution by Fracture Type – Transverse.

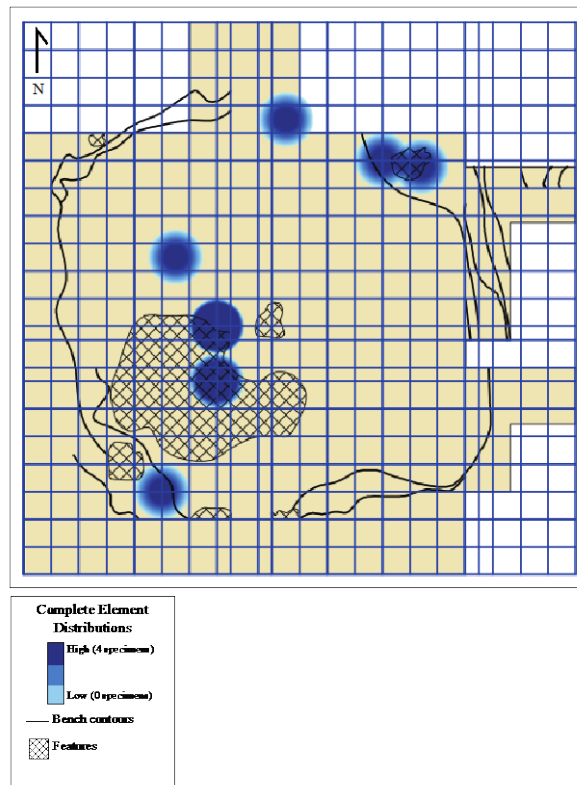


Figure 6.43. Fauna Distribution by Fracture Type – Complete

to trampling, are less frequent (Figure 6.42). While concentrations occur within the midden and along the northern bench, transverse fractures have a wider distribution throughout the housepit, especially in the central areas adjoining blocks. This pattern is consistent with these areas receiving higher traffic. Complete elements occur rarely. High accumulations occur near the northeast hearth, midden, or cache pit (Figure 6.43). These fracture patterns aid in identifying refuse patterns as well as areas of greater faunal processing. Patterns of irregular, oblique, and spiral fractures that are associated with greater processing surround the central hearth, revealing that the feature was focus of fauna-oriented activities.

Burn Stage

Distributions of burnt bone can reveal areas in which greater processing of faunal resources occurred as well as refuse patterns of exhausted specimens. Non-burnt bone has

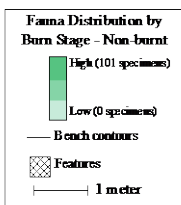
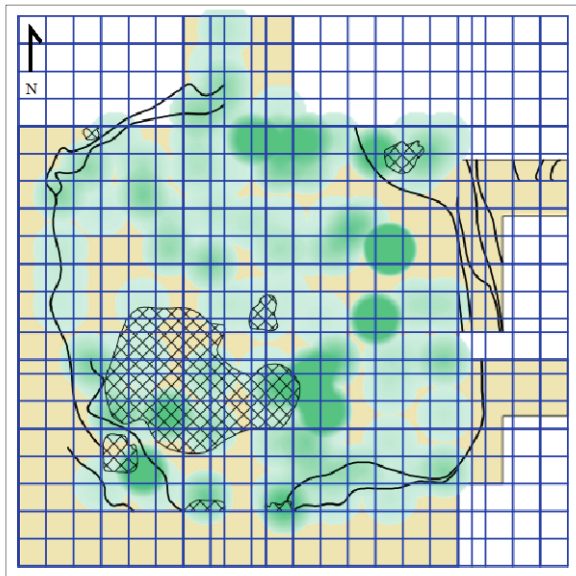


Figure 6.44. Fauna Distribution by Burn Stage – Non-burnt.

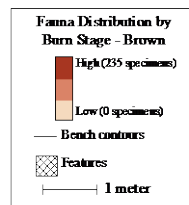
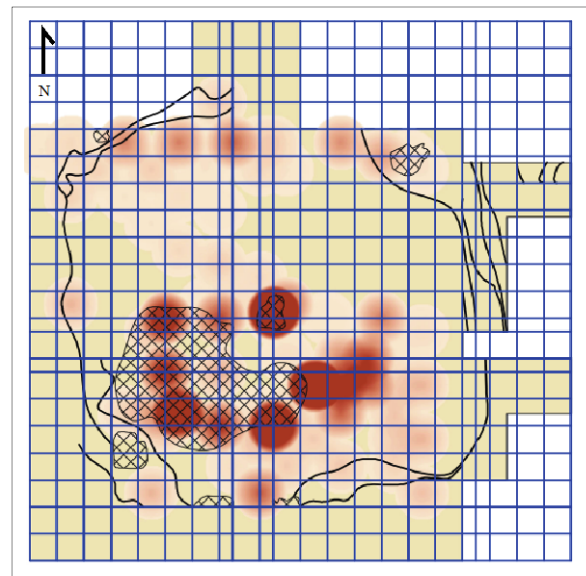


Figure 6.45. Fauna Distribution by Burn Stage – Brown.

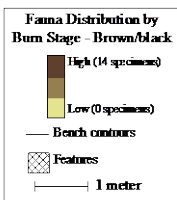
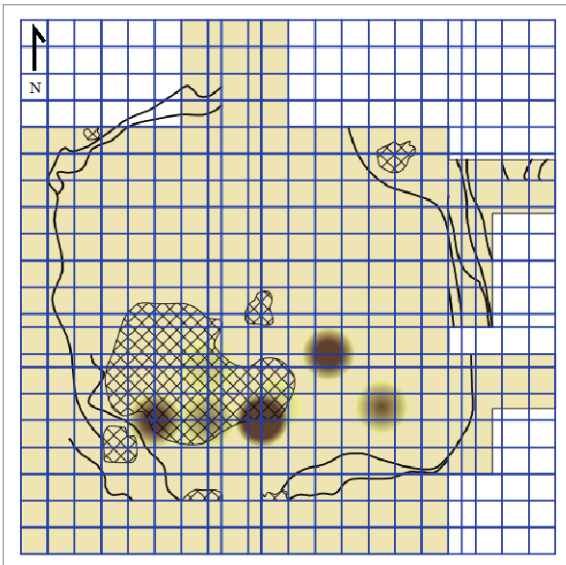


Figure 6.46. Fauna Distribution by Burn Stage – Brown/black.

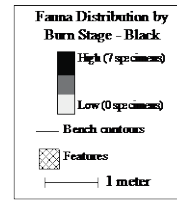
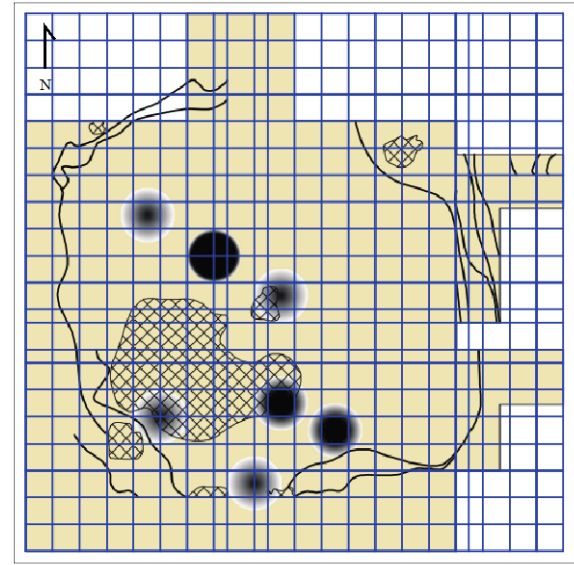


Figure 6.47. Fauna Distribution by Burn Stage – Black.

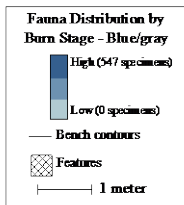
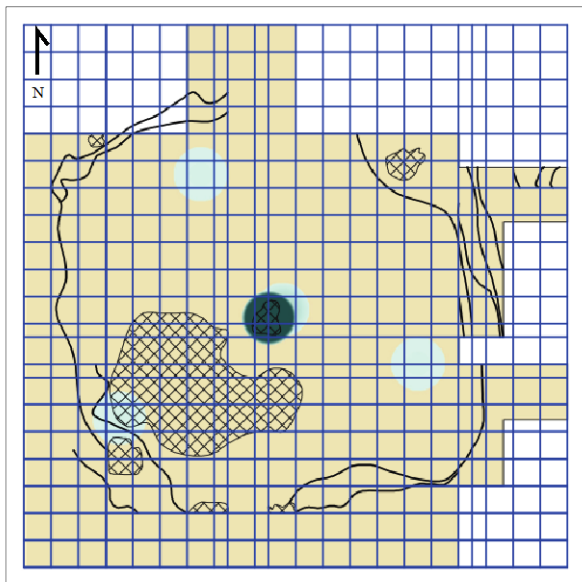


Figure 6.48. Fauna Distribution by Burn Stage – Blue/gray.

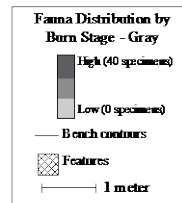
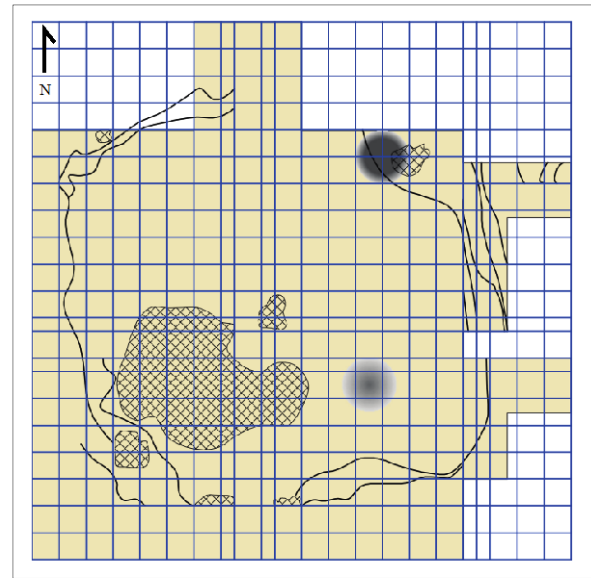


Figure 6.49. Fauna Distribution by Burn Stage – Gray.

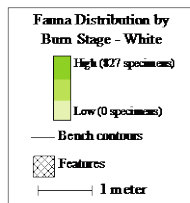
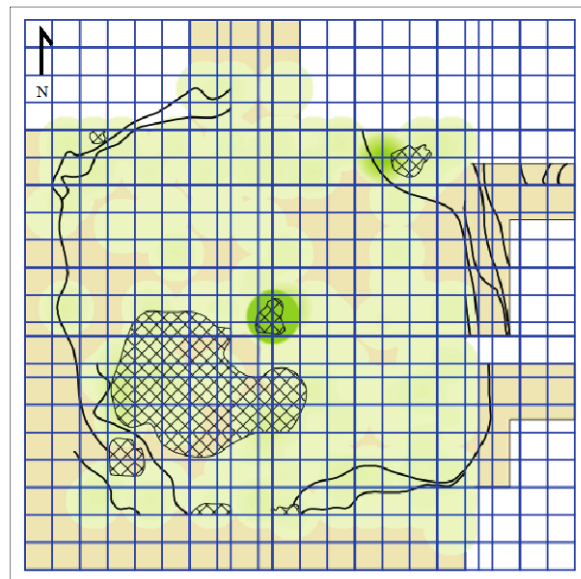


Figure 6.50. Fauna Distribution by Burn Stage – White.

the widest distribution (Figure 6.44). Areas of dense accumulations form an arc along the midden, northeast hearth, and northern bench that encircles the central hearth. Early stage burnt bone (brown, brown/black, and black) are more limited to the midden or central hearth. Brown burnt bone occurs most often within or near the midden and the central hearth, though moderate distributions are also present along the northern hearth (Figure 6.45). Both brown/black (Figure 6.46) and black burnt (Figure 6.47) fauna occur most frequently in the region surrounding the midden. Distributions of blue/gray bone are highest within the central hearth (Figure 6.48). This pattern is consistent with the hearth serving as the primary cooking feature. Burnt gray bone concentrations are densest near the northeast hearth (Figure 6.49). White bone, the last burn stage, is the most abundant of the burn stages. Although it has a wide distribution, areas of dense accumulations are present in the midden, along the northern bench, and within the hearths (Figure 6.50). While dense distributions within the central hearth are more limited by the feature's borders, high accumulations associated with the northeast hearth occur both within and near the feature, suggesting that the northeast hearth was not swept as regularly as the central hearth. Additionally, the greater accumulations of later stages of burnt bone with the central hearth suggests that it was frequently used and generated high heat for longer periods of time, revealing the feature had a relatively long use life in comparison to the northeast hearth.

Weathering Stage

The amount of weathering faunal specimens experience can be an additional indicator of the processing efforts or the taphonomic processes they experienced. Stage 2 is the most frequent weathering stage. Although present throughout the housepit, greater

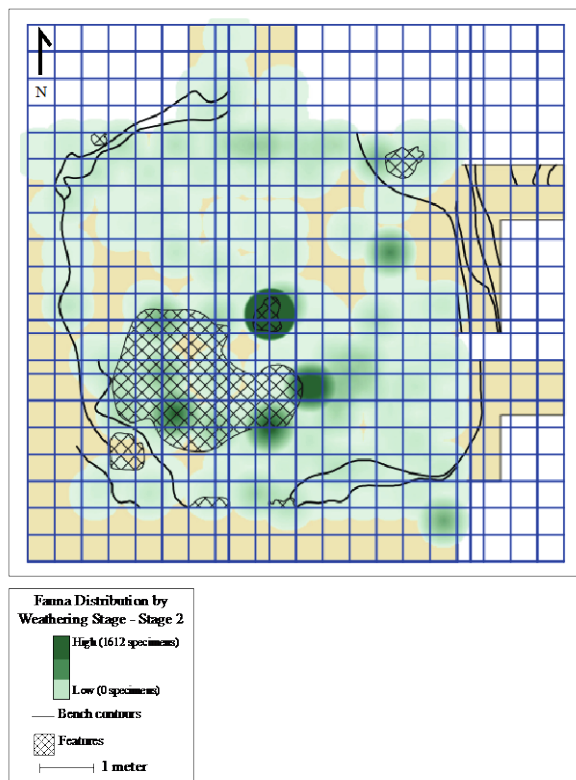


Figure 6.51. Fauna Distribution by Weathering Stage 2.

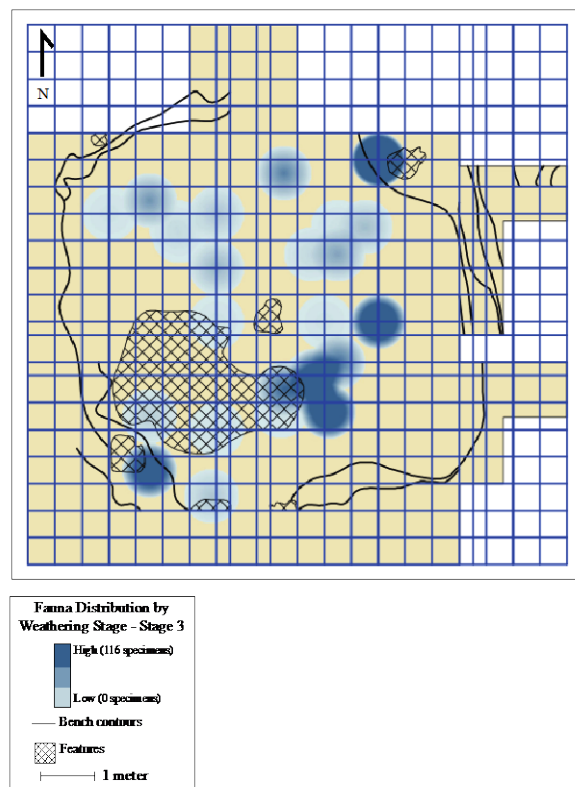


Figure 6.52. Fauna Distribution by Weathering Stage 3.

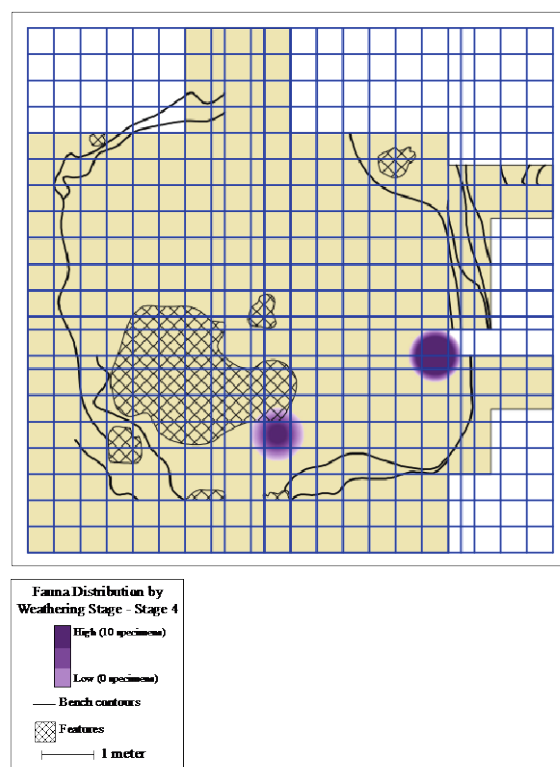


Figure 6.53. Fauna Distribution by Weathering Stage 4.

accumulations exist within and near the midden and central hearth (Figure 6.51).

Moderate distributions are present along the northern bench. Stage 3 weathering, which occurs as fauna are subject to additional processing or taphonomic stresses, are concentrated southeast of the central hearth (Figure 6.52). Isolated concentrations are also present near the northeast hearth and cache pit. Areas of moderate distributions are present between Blocks C and D. Stage 4 fauna occurs rarely and was recovered in two locations: near the midden and the side entrance (Figure 6.53).

Species Utility

Distributions of faunal species by utility can reveal differential subsistence resource access or areas in which food is prepared. Large distributions of high utility species are associated with the hearths, though moderate accumulations also occur near the midden and northern bench (Figure 6.54). An isolated concentration is present between the hearths. Medium utility specimens occur more frequently within and near the

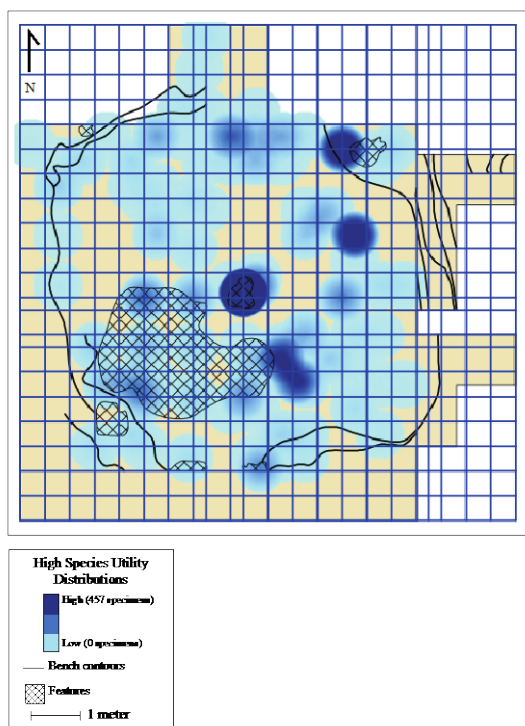


Figure 6.54. Fauna Distribution by Species Utility – High.

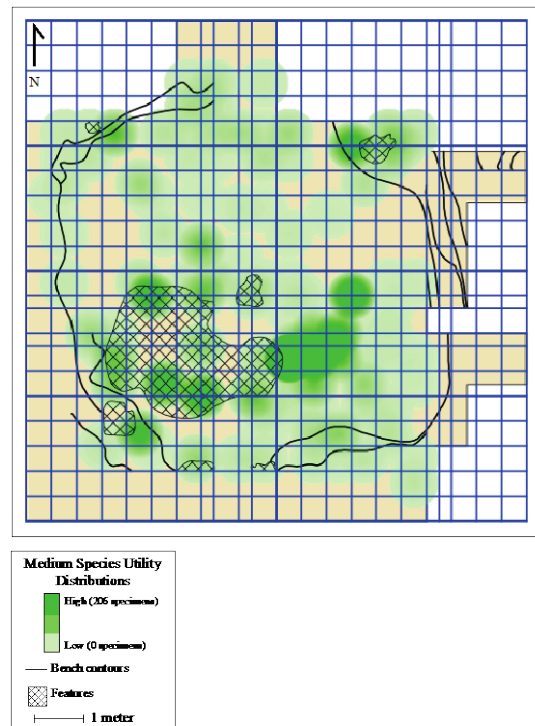


Figure 6.55. Fauna Distribution by Species Utility – Medium.

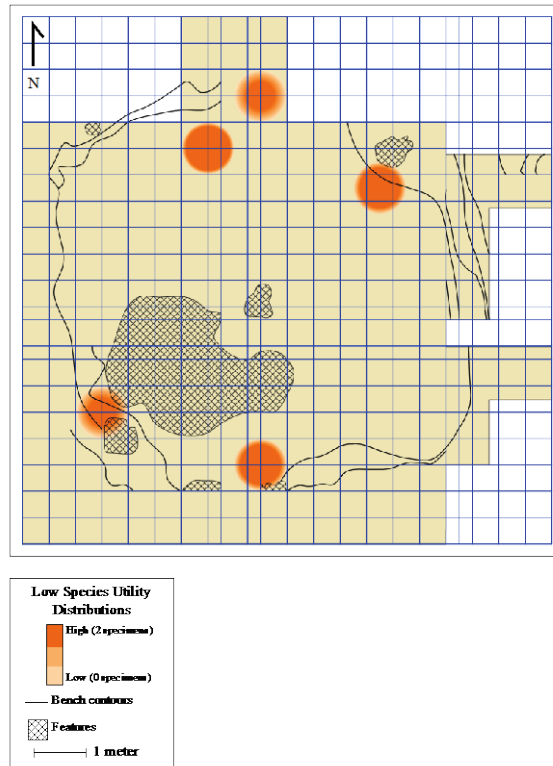


Figure 6.56. Fauna Distribution by Species Utility – Low.

midden and the northeast hearth (Figure 6.55). Although very low concentrations are in the central hearth, moderate to high distributions surround the features, revealing it was the epicenter of faunal processing. Species of low utility occur rarely and in isolated locations surrounding the bench (Figure 6.56). Because the distribution of high and medium utility species are determined by the features present rather than distinct areas along the bench corresponding with individual families, differential subsistence resource access is not apparent.

Element Utility

An examination of species by element utility can reveal more detailed patterns in faunal use in HP 54. Similar distributions of high and medium utility elements are present (Figures 6.57 and 6.58). Dense accumulations occur in and near the midden. Both hearths

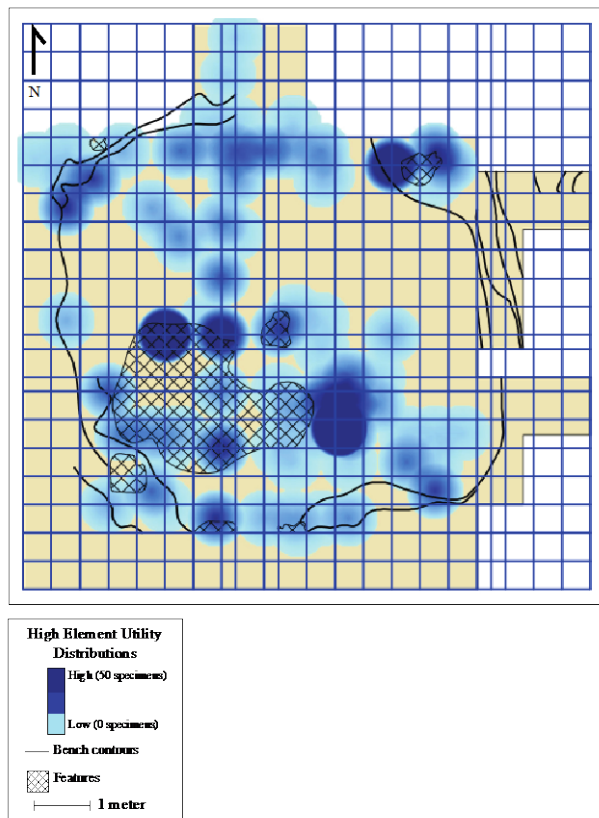


Figure 6.57. Fauna Distribution by Element Utility – High.

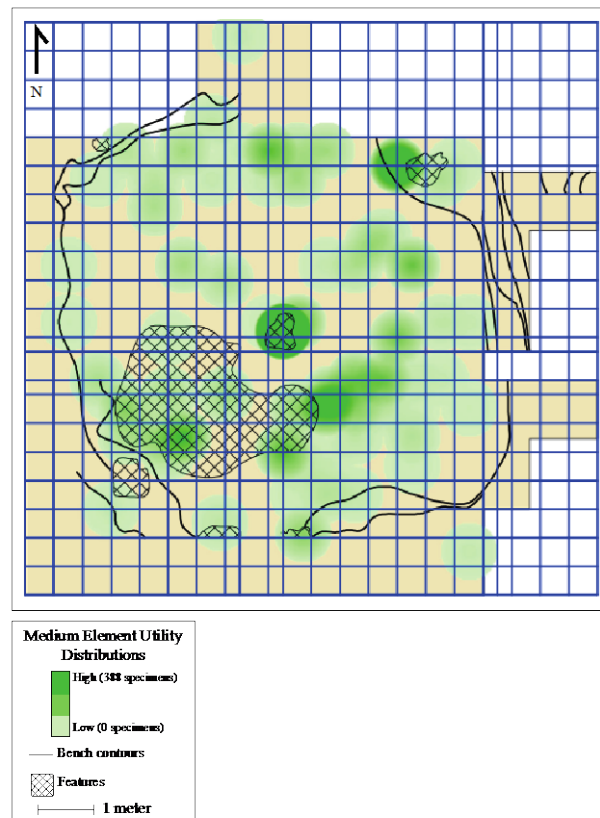


Figure 6.58. Fauna Distribution by Element Utility – Medium.

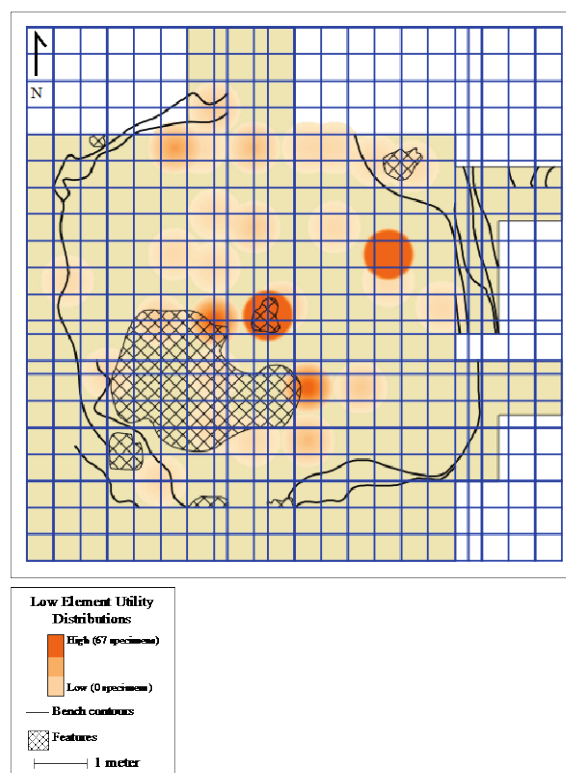


Figure 6.59. Fauna Distribution by Element Utility – Low.

have a high concentration of high utility elements that is consistent with their cooking function. High distributions also exist along the benches where debris tends to accumulate. Low utility elements are less frequent. Distributions are higher in the northern hemisphere, especially within the central hearth and the center of Block D (Figure 6.59). The distribution of high utility elements by features rather than isolated locations along the bench reflects an organization of activities around the central hearth rather than differential subsistence resource access between families.

Heavy Fraction Fauna

Distribution

The distribution of fauna recovered from heavy fractions can reveal areas in which faunal activities were performed even when larger debris was discarded: however, the relatively low distributions of fauna encircling the high concentration associated

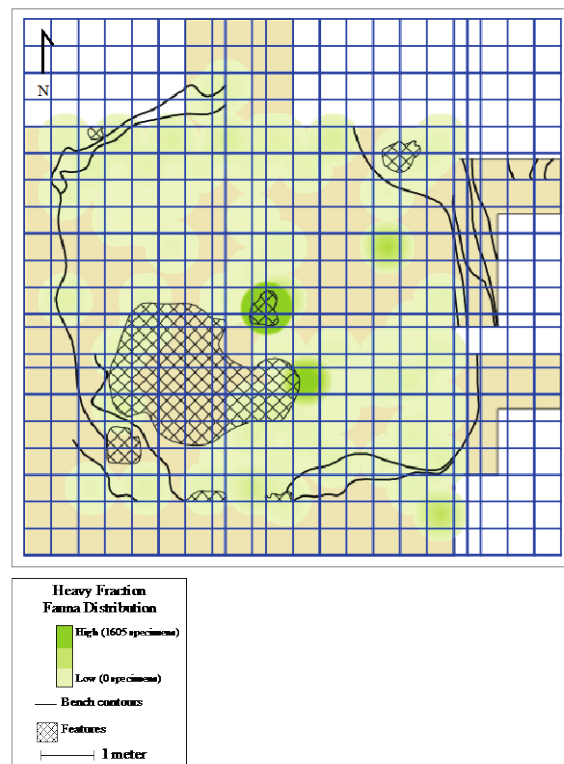


Figure 6.60. Heavy Fraction Fauna Distribution.

with the central hearth seems to reflect discard processes occurred in this communal area (Figure 6.60). Such high distributions may be due to the use of the central hearth as the primary cooking feature as well as a receptacle for swept debris from the surrounding areas. Isolated concentrations occur near the midden and within the center of Block D. Relatively low accumulations are associated with the northeast hearth, suggesting that intense faunal processing did not occur there.

Size Grade

An analysis of heavy fraction fauna by size grade can uncover more detailed depositional patterns. Xxsmall faunal fragments are densest in the central hearth and near the midden although they have a wide distribution throughout the floor context (Figure 6.61). Xsmall fragments are less frequent and occur in more concentrated distributions along the northern bench (Figure 6.62). Concentrations within the southern hemisphere

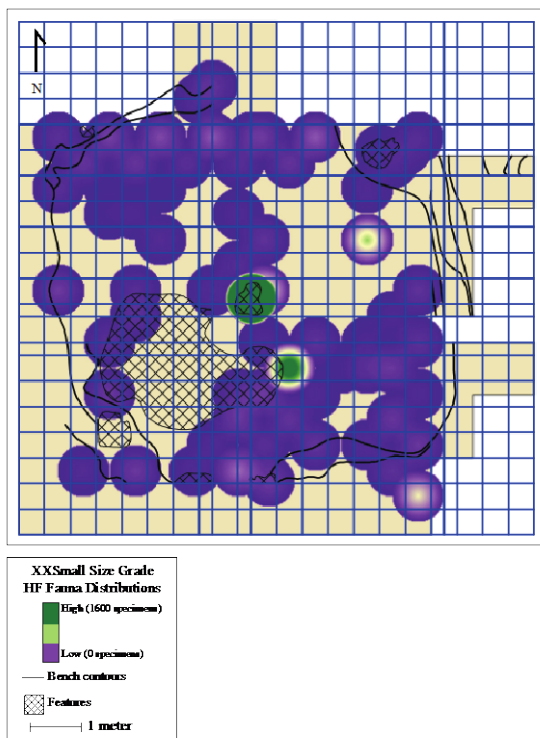


Figure 6.61. Heavy Fraction Fauna Distribution by Size Grade Xxsmall.

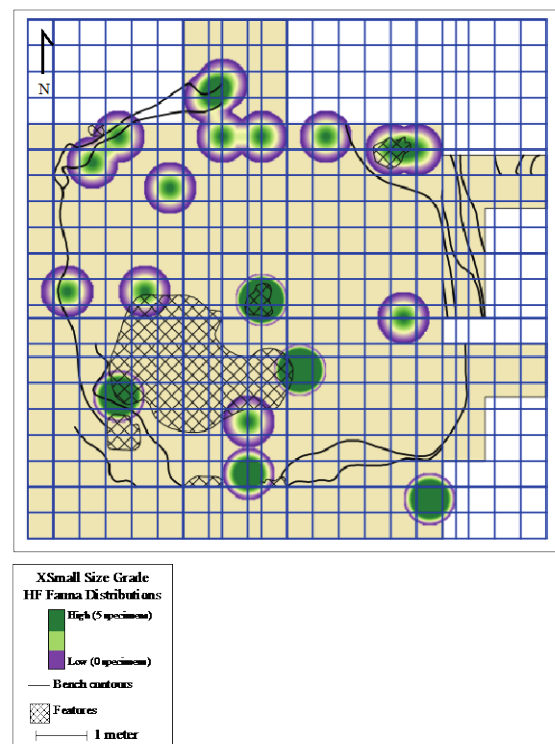


Figure 6.62. Heavy Fraction Fauna Distribution by Size Grade Xsmall.

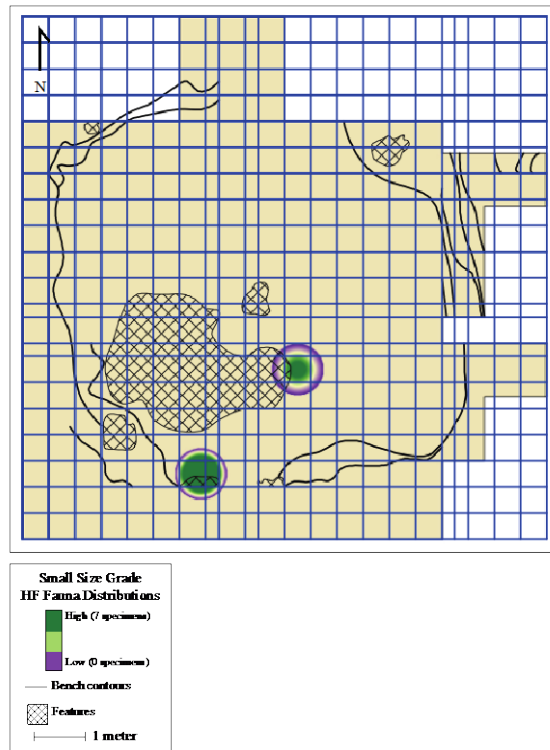


Figure 6.63. Heavy Fraction Fauna Distribution by Size Grade Small.

are less aggregated though most tend to surround the midden. High accumulations are also present in the hearth features. Small fragments occur very rarely and are limited to the midden and the Block A pit feature (Figure 6.63).

Distributions vs. Artifact Clusters

Debitage Distributions and Tool Types

Correlations between high accumulations of debitage and tool types can aid in identifying activity areas. Both debitage and tools are densest in the southeast corner of the housepit, which may indicate it was an area of lithic reduction (Figure 6.64). Scrapers, cutting implements, and drills/piercers occur most frequently in this corner. A cluster of scrapers besides an abrader reveals other types of tool production occurred in the area. Smaller concentrations of tools and debitage occur along the northern bench and

the northeast hearth, suggesting additional although isolated activity areas of lithic reduction. The northeast hearth contains a variety of chipped tools and a relatively high debitage concentration. The presence of an abrader with several groundstone tools indicates other methods of tool production occurred there. The high accumulations of various tool types in addition to debitage within the midden are consistent with discard practices. The dearth of debitage and tools within the center of the housepit are consistent with its use as communal space.

Fauna Distributions and Tool Types

Recognizing areas with dense fauna accumulations and clusters of tool types can aid in revealing activity areas. Moderate fauna concentrations along the northern bench correlate with a cluster of cutting implements, projectile points, and scrapers (Figure 6.65). A similar distribution of cutting implements and scrapers is present near the moderate accumulations of fauna associated with the cache pit. These regions with high faunal distributions and scrapers could be activity areas in which hide working occurred. A wider variety of tool types, including an abrader, adze, cutting implement, drill/piercer, and two scrapers, correspond with the northeast hearth that is surrounded by high fauna concentrations. The southeast corner of the housepit contains the highest amount of tools, most of which are cutting implements and scrapers, in relation to a moderate distribution of fauna, indicating a possible space for fauna-oriented activities. Few tools and fauna are present around the central hearth, suggesting this area was maintained for communal space.

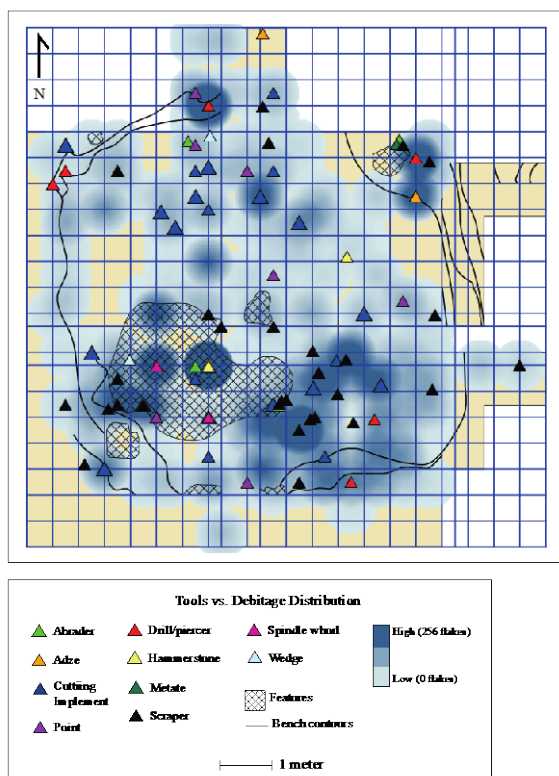


Figure 6.64. Tools vs. Debitage Distribution.

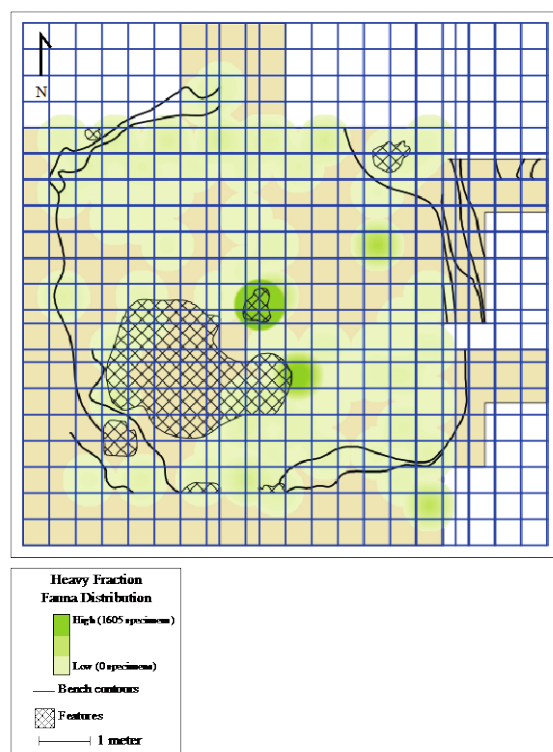


Figure 6.65. Tools vs. Fauna Distribution.

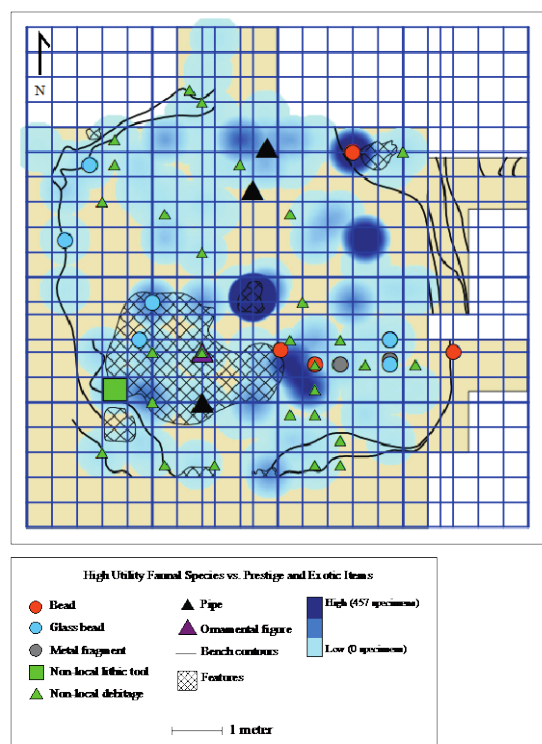


Figure 6.66. High Utility Faunal Species vs. Prestige Items.

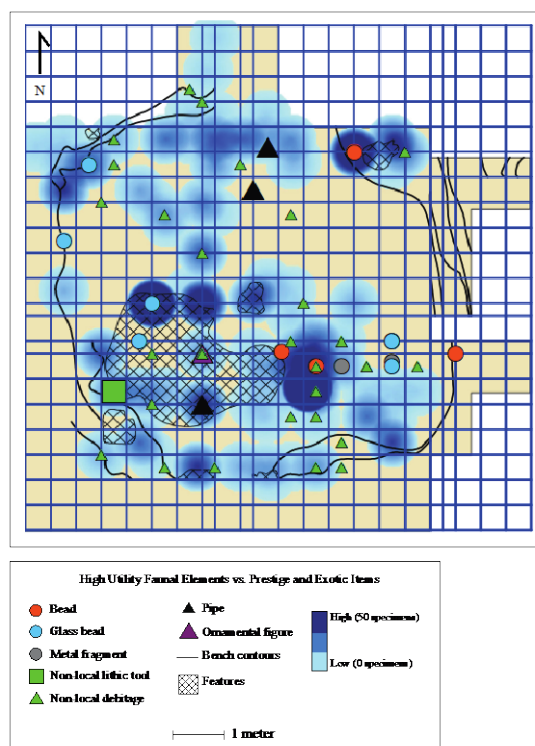


Figure 6.67. High Utility Faunal Elements vs. Prestige Items.

High Utility Fauna and Prestige Items

If the housepit were organized by residential units marked by material-based wealth distinctions then high utility faunal resources would correlate with prestige items. However, while both data types occur throughout the housepit, the densest accumulations of high utility faunal species and elements are present in the hearths while prestige goods have a wider distribution (Figure 6.66 and 6.67). This indicates that while variations occur within the housepit, they seem tied to organized activity areas rather than residential units.

Discussion

The results of these analyses indicate that HP 54 was organized by activity areas rather than residential units. Interpretative maps illustrating activity areas (Figure 6.68) and depositional patterns (Figure 6.69) are available below. The distribution of features is consistent with ethnographic descriptions of housepits with shared activity areas. This is most evident with the central hearth, which served as the focus for household activities. High accumulations of fauna within the hearth indicate that it served as the primary cooking features. The frequency of its use is indicated with the deep extent of oxidized soils as well as the high concentrations of late stage burnt bone. High concentrations of irregular, oblique, and spiral fractures associated with greater fauna processing efforts that surround the hearth signal that the region was used more intensely for fauna-oriented activities than other areas. The very low distribution of FCR recovered from within the feature suggests that the feature was maintained through the removal of refuse to the nearby midden. Low distributions of FCR, debitage, and faunal debris as well as

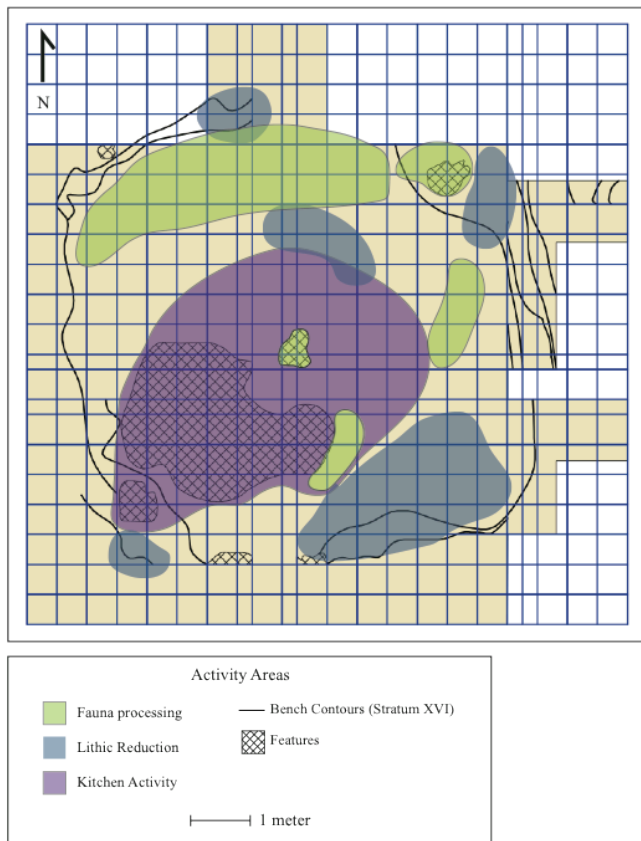


Figure 6.68. Activity Areas.

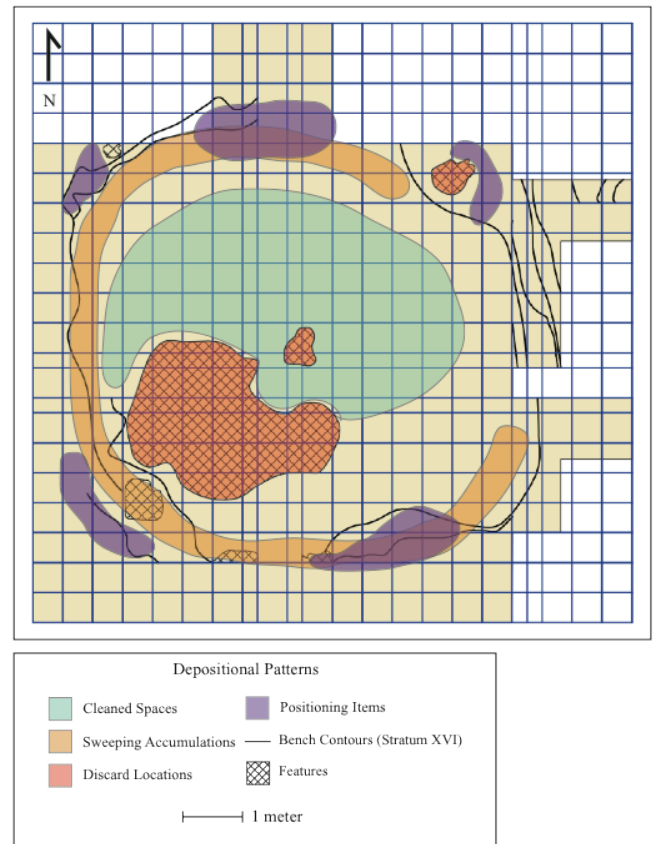


Figure 6.69. Depositional Patterns.

tools in the region surrounding the hearth indicate that the area was cleaned regularly for communal use. While the midden may have served as the dominant refuse receptacle, the high faunal concentrations may indicate that fauna was additionally swept into the hearth.

Patterns associated with the northeast hearth reveal that it had a very different use life than the central hearth. The lack of oxidized soil and lower concentrations of late stage burnt fauna suggests that the feature was established late into the floor's history. The higher accumulations of FCR, debitage, and faunal debris in and near the hearth suggest that the feature was not maintained like the central hearth. While associated with relatively high amounts of fauna, the low distributions of fracture types associated with additional processing as well as heavy fraction fauna do not indicate that the feature was utilized intensely. In addition to being an area of limited food preparation, a small but

dense distribution of debitage and an abrader in conjunction with various tool types suggests that it was an area of both chipped and ground stone tool production. This cluster of tools along the feature's margins may signal they were stored positioning items. Such objects are placed in areas with little traffic, usually near features, so that they are out of the way and stored for safekeeping.

The region near the post hole also seems to be a focus of an activity area, as witnessed by isolated accumulations of debitage and a variety of tools, the majority of which are cutting implements, projectile points, scrapers, and drills/piercers. Their accumulation around the post hole could indicate they were stored positioning items. These tool types correspond with the capture and preparation of faunal subsistence resources as well as hide working. Although primary stage hide working likely occurred on the roof, secondary hide working to make fine clothing may have occurred inside. The location of this tool cluster within moderate concentrations of faunal remains suggests that the area was utilized for fauna-oriented activities.

The size of the midden and the high distributions of FCR, debitage, tools, and fauna associated with it are consistent with its communal use for discarding exhausted or unwanted objects. This pattern is especially evident with the distribution of burnt bone and fracture types. High accumulations of early and late stage burnt specimens as well as oblique, spiral, and irregular fracture types associated with additional processing efforts occur in the midden, suggesting that these faunal specimens experienced additional processing to extract the maximum amount of nutrition possible before being discarded.

Only a single cache pit is present, suggesting that household inhabitants shared its contents. The margins of the feature are surrounded by moderate accumulations of fauna,

the majority of which are high and medium utility species and high utility elements that are consistent with subsistence decisions to store high-yielding foods. The lack of fauna associated within the feature may suggest that it was actually a refuse pit. The two shallow pit features (Features A2 and B1) are associated with relatively low to moderate distributions of fauna though moderate to high accumulations of FCR and debitage. While both seem to originally have been post holes, their most recent function remains unclear; however, the wide variety of materials that are associated with them may suggest their use as additional middens.

The southeast corner of the house appears to be an activity area in which lithic production occurred. This is supported by large distributions of debitage that corresponds to high tool counts as well as low faunal distributions. The majority of the tools present are cutting implements, scrapers, and drills/piercers. The presence of an abrader in association with these tools indicates that both chipped and ground stone tool production occurred. The placement of this activity area within the south may correspond to the natural heat and light this region received.

Relatively low numbers of FCR, debitage, tools, and faunal remains northwest of the central hearth suggests it is a high traffic area associated with the roof ladder. Similar distributions occur near the eastern margin of the pithouse between Blocks B and D, suggesting a side entrance. Such findings are consistent with HP 54 roof analyses conducted with the same methodology as this research (Hamilton et al. 2013).

The bench running along the periphery of the structure provides sleeping and personal spaces for individual families. In some areas, like the northwest corner of block C, the bench is multi-tiered. Such areas may have been too small to accommodate

sleeping but may have served as activity areas. Depositional patterns associated with the bench are consistent with primary and secondary depositional processes: the placement of positioning items and the sweeping of refuse towards features. Clusters of tools that occur along the bench may reflect positioning items stored for future use that were abandoned when HP 54 inhabitants relocated to the surrounding European settlements. The concentrations of FCR, debitage, and larger fauna fragments represent refuse that was swept out of the way. Why this process can be intentional, it can also occur unintentionally as debris accumulates in areas that are harder to clean.

No indications of significant material wealth-based inequalities are present. Such disparities would be evident with locations within the housepit containing both high distributions of prestige items and high utility faunal resources; however, while high utility fauna is limited to the hearth or midden features, prestige items have a wider distribution throughout the household. These patterns imply an organization by activities rather than areas with disparate proportions of material wealth. Together these trends suggest that HP 54 was organized by shared activity areas corresponding to a communalist mode of a corporate household strategy with repressed material wealth-based distinctions.

CHAPTER 7 CONCLUSION

This thesis sought to examine intrahousehold relationships of HP 54 through the identification of spatial organizations corresponding to network or corporate strategies. The first hypothesis outlined a network strategy characterized by greater centralization of power and variability in material-wealth that is reflected in residential units with individual features and disparate accumulations of prestige goods and high utility resources. Such floor plans have been ethnographically observed among the Thompson and Lower Lillooet. The second hypothesis proposed a corporate household strategy that lacks the centralization of power seen in the network strategy. This household strategy may have two spatial manifestations depending on the level of communalism involved: a collectivist mode characterized by residential units lacking significant material-based wealth differences and a communalist mode marked by shared activity areas. Housepits divided by activity areas or “rooms” have been described in ethnographies of the Shuswap and Lillooet as well archaeological reports of the Keatley Creek site. The results of GIS analyses utilizing lithic, historic, and faunal data in relation to features suggests that HP 54 was organized by shared activity areas corresponding to a more communalist mode of the corporate household strategy.

The separation of features into hemispheric distributions suggests that the space was shared, though the bench offered opportunities for individual families to have personal space. Communal space is best observed with the central hearth, which was the focus of all activities. The deep extent of soil oxidation and late stage burn fauna suggest that the feature was frequently utilized and reached high temperatures. Low distributions of refuse round the hearth and FCR within the hearth reveal that that feature was

maintained over its long use life. The effort in cleaning the surrounding area reveals that greater care was invested in this space. While the northeast hearth also served a cooking function, soil and distribution patterns indicate that it was a single use event late in the floor's history. The feature lacks the deep oxidation and burnt bone associated with the central hearth. Additionally accumulations of FCR, debitage, and faunal debris both in and around the feature reveal that it did not receive the same cleaning care. Distribution patterns also differ with the presence of a small tool kit consisting of a wide variety of chipped and ground stone tools along the perimeter of the hearth; while the center of the housepit contained relatively few tools, the placement of this tool kit near the northeast hearth could indicate these were positioning items stored along the bench.

The peripheral bench allowed families to have personal space while participating in a communal corporate household strategy. This is best seen with the distribution of prestige goods, which consists of ornamental objects, non-local materials, and historic artifacts. While distributed throughout the housepit, clusters tend to occur within the directional corners. Although each cluster differs slightly in the amount and types of prestige items present, the differences are not significant, revealing that material wealth-based distinctions were absent. Differential access to subsistence resources is also absent. Only a single cache pit is present, indicating that the household relied on the same stored resources. The distributions of high utility fauna, which are restricted to the hearths, further demonstrate that HP 54 was organized by activity areas rather than residential units. Depositional patterns along the bench are consistent with bench zone distributions. FCR and larger size grades of debitage and fauna tend to accumulate along the benches as the result of sweeping activities that make this region more difficult to clean. Such

areas also provided space to store positioning items. Clusters of tools are present along the northern bench from the Block C post hole to the northeast hearth as well as along the southern bench near the cache pit and pit features. These clusters may correspond to additional post holes that were not recognized in the field.

High tool densities in the southeast corner and the north-central region may indicate the presence of activity areas grouped around the central hearth. The southeast corner has high quantities of debitage corresponding to high counts of chipped stone tools. The presence of an abrader in relation to several groundstone tools and a high distribution of fauna indicates that the area was also utilized for both groundstone and ground bone tool production. Moderate rates of fauna along the northern bench in association with high proportions of knives, scrapers, and drills may reflect that the region experienced more fauna-oriented activities.

Aspects of housepit construction are also apparent with the distribution of different data types. The area northwest of the central hearth contains relatively low quantities of FCR, debitage, lithics, and fauna, which may correlate with the presence of the roof ladder. This is also seen with the distribution of larger debitage and fauna size grades, which tend to occur near structural features, along the margins of this open space. The low accumulations of all data types near the eastern margin of the pithouse are consistent with areas of heavy traffic adjacent to the side entrance.

The floor plan reflects that communalism and collectivism exist along a spectrum. Communalism is marked by the greater stability and cohesiveness of the group that routinely produces and consumes as a unit. The central hearth is a symbol of the household communalism. Well maintained and frequently used, the feature organized the

surrounding activities. Depositional patterns associated with the hearth, midden, and cache pit indicate that fauna-oriented activities were cooperative and their yields shared. A level of collectivism is also present. The peripheral bench offered each family within the household to have personal space to sleep and store belongings. Prestige and exotic items occur most frequently within this context. While slight variations are present in the number and types of such material wealth throughout the bench setting, the distributions do not indicate significant socioeconomic distinctions, reflecting that intrahousehold ranking was either absent or suppressed.

In addition to contributing to regional household archaeology through a discussion of production and intrahousehold ranking corresponding to household strategies, this research allows a greater examination of the relationship between ethnographic and archaeological records. Ethnographies are invaluable resources that may provide detailed descriptions of Native cultures; however, twentieth century ethnographies are also limited by idealized accounts resulting from the use of few informants or the search for “pristine traditional cultures.” The archaeological record can supplement or contradict these accounts to create a more accurate and complete view of Mid-Fraser households. Both ethnographic and archaeological descriptions were utilized in this thesis to structure hypotheses and their expectations. The detailed accounts of housepit constructions and interiors provided by Mid-Fraser ethnographies allowed the recognition of broad spatial organizations; however, an understanding of archaeological phenomena was crucial for understanding more intricate depositional patterns. The findings from this research provide a greater level of detail to synthesized ethnographic

descriptions, thus contributing to an increased understanding of socioeconomic and spatial organizations of Mid-Fraser households.

This research also enhances our understanding of Native culture during the Fur Trade Era. The majority of archaeological investigations on this time period emphasize processes of acculturation or transculturation rather than recognizing the ways in which indigenous populations adapt to maintain their ethnic identities. Views on stasis can be equally undermining. Such perspectives view Native cultures as relics either incapable of adaptation or prohibited to change at the threat of losing their cultural integrity. The presence of historic trade artifacts in conjunction with traditional prestige items within HP 54 suggests a creative reworking of material objects and cultural practices to include new forms of material wealth. This reveals that HP 54 inhabitants were not static to the changing historical environment. Rather than accepting any foreign artifact into their material culture, HP 54 inhabitants displayed selective decision-making in including items that would fit in the existing cultural structure, revealing that while cultures adapt, they do so within their own framework. For adaptive indigenous groups, the fur trade offered new opportunities to create alliances and extend power. The ability of HP 54 to adapt may be the reason why this household was one of the few that persisted and flourished in the Bridge River village during the Fur Trade Era.

References Cited

Acheson, Steven, and James P. Delgado

2004 Ships for the Taking: Culture Contact and the Maritime Fur Trade on the Northwest Coast of North America. In *The Archaeology of Contact in Settler Societies*, edited by Tim Murray, pp. 48-77. Cambridge University Press, Cambridge.

Alexander, Diana

1992a Environmental Units. In *A Complex Culture of the British Columbia Plateau: Traditional Stl'átl'imx Resource Use*, edited by Brian Hayden, pp. 47-98.

1992b Prehistoric Land Use. In *A Complex Culture of the British Columbia Plateau: Traditional Stl'átl'imx Resource Use*, edited by Brian Hayden, pp. 99-176.

2000 Pithouses on the Interior Plateau of British Columbia: Ethnographic Evidence and Interpretation of the Keatley Creek Site. In *The Ancient Past of Keatley Creek, Volume II Socioeconomy*, edited by Brian Hayden, pp. 29-66. Archaeology Press, Burnaby, B.C.

Allison, Penelope M.

1999 Introduction. In *The Archaeology of Household Activities*, edited by Penelope M. Allison, pp. 1-18. Routledge, New York.

Ames, Kenneth M., Doria F. Raetz, Stephen Hamilton, Christine McAfee

1992 Household Archaeology of a Southern Northwest Coast Plank House. *Journal of Field Archaeology* 19: 275-290.

2006 Thinking about Household Archaeology on the Northwest Coast. In *Household Archaeology on the Northwest Coast*, edited by Elizabeth A. Sobel, D. Ann Trieu Gahr, and Kenneth M. Ames, pp. 16-36. International Monographs in Prehistory, Anne Arbor.

Andrefsky, William, Jr.

2005 *Lithics: Macroscopic Approaches to Analysis*. 2nd ed. Cambridge University Press, Cambridge.

Austin, Darrell A.

2007 *A Lithic Raw Materials Study of the Bridge River Site, British Columbia, Canada*. Unpublished Master's Thesis, Department of Anthropology, University of Montana, Missoula.

Barnett, H.G.

1944 Underground Houses on the British Columbian Coast. *American Antiquity* 9(3): 265-270.

Bawden, Garth

- 1982 Community Organization Reflected by the Household : A Story of Pre-Columbian Social Dynamics. *Journal of Field Archaeology* 9: 165-181.

Beaudry, Mary C.

- 1989 Household Structure and the Archaeological Record: Examples from Ne World Historical Sites. In *Households and Communities*, edited by Schott MacEachern, David J.W. Archer, and Richard D. Garvin, pp. 84-92. University of Calgary Archaeological Association, Calgary.

Behrensmeyer, Anna K.

- 1978 Taphonomic and Ecologic Information from Bone Weathering. *Paleobiology* 4(2): 150-162.

Berry, Kevin

- 2000 Prehistoric Salmon Utilization. In *The Ancient Past of Keatley Creek, vol. 2.:Socioeconomy*, edited by Brian Hayden, pp. 135-142. Archaeology Press, Burnaby, B.C.

Binford, Lewis R.

- 1978 Dimensional Analysis of Behavior and Site Structure: Learning from an Eskimo Hunting Stand. *American Antiquity* 43(3): 330-381.
- 1979 Organization and Formation Processes: Looking at Curated Technology. *Journal of Anthropological Research* 35(3): 255-273.
- 1980 Willow Smoke and Dogs' Tails: Hunter-Gatherer Settlement Systems and Archaeological Site Formation. *American Antiquity* 45(1): 4-20.

Blanton, Richard E.

- 1994 *Houses and Households: A Comparative Study*. Plenum Press, New York.

Blanton, Richard E., Gary M. Feinman, Stephen A. Kowalewski, and Peter N. Peregrine

- 1996 A Dual-Processual Theory for the Evolution of Mesoamerican Civilization. *Current Anthropology* 37(1): 1-15.

Boas, Franz

- 1900 *The Mythology of the Bella Coola*. Memoirs Vol. 2, No. 2, pp. 26-120. American Museum of Natural History, New York.

Burley, David V., and Philip M. Hobler

- 1997 Archaeology and the British Columbia Fur Trade. *The Midden* 29(1): 2-5.

Cail, Hannah S.

- 2011 *Feasting on Fido: Cultural Implications of Eating Dogs at Bridge River*. Unpublished Master's Thesis, Department of Anthropology, University of Montana, Missoula.

Cannon, Debbi Yee

- 1987 *Marine Fish Osteology: A Manual for Archaeologists*. Simon Fraser University, Burnaby, B.C.

Cannon, Michael D.

- 2002 A Model of Central Place Forager Prey Choice and an Application to Faunal Remains from the Mimbres Valley, New Mexico. *Journal of Anthropological Archaeology* 22: 1-25.

Carlson, Eric S.

- 2010 *Subsistence Change and Emergent Social Inequality in an Early Complex Hunter-Gatherer winter Village: A Zooarchaeological Assessment of the Bridge River Site (EeRl4), Middle Fraser B.C.* Unpublished Master's Thesis, Department of Anthropology, University of Montana, Missoula.

Carlson, Catherine C.

- 2000 Archaeology of Contact-Period Plateau Salishan Village at Thompson's River Post, Kamloops, British Columbia. In *Interpretations of Native North American Life: Material Contributions to Ethnohistory*, edited by Michael S. Nassaney and Eric S. Johnson, pp. 272-295. University Press of Florida, Gainesville.

- 2006 Indigenous Historic Archaeology of the 19th Century Secwepemc Village at Thompson's River Post, Kamloops, British Columbia. *Canadian Journal of Archaeology* 30:193-250.

Carlson, R.L.

- 1996 The First British Columbians. In *The Pacific Province: A History of British Columbia*, edited by Hugh J.M. Johnston, pp. 12-46. Douglas and McIntyre, Vancouver.

Chatters, James

- 1998 Environment. In *Handbook of North American Indians*, vol. 12, The Plateau. Edited by D.E. Walker, pp. 29-42. Smithsonian Institution Press, Washington, D.C.

Church, Robert R., and R. Lee Lyman

- 2003 Small Fragments Make Small Differences in Efficiency When Rendering Grease from Fractured Artiodactyl Bones by Boiling. *Journal of Archaeological Science* 30: 1077-1084.

Cotterell, Brian, and Johan Kamminga

- 1987 The Formation of Flakes. *American Antiquity* 52: 675-708.

- Coupland, Gary
 1985 Household Variability and Status Differentiation at Kitselas Canyon. *Canadian Journal of Archaeology* 9(1): 39-56.
- Coupland, Gary, Terence Clark, and Amanda Palmer
 2009 Hierarchy, Communalism, and the Spatial Order of Northwest Coast Plank Houses: A Comparative Study. *American Antiquity* 74:77-106.
- Crellin, David F., and Ty Heffner
 2000 The Cultural Significance of Domestic Dogs in Prehistoric Keatley Creek Society. In *The Ancient Past of Keatley Creek Volume 2: Socioeconomy*, edited by Brian Hayden, pp. 151-164. Archaeology Press, Burnaby.
- Dawson, George Mercer
 1891 Notes on the Shuswap People of British Columbia. In *Proceedings and Transactions of the Royal Society of Canada*, 9(3): 3-44.
- Deetz, James J.F.
 1982 Households. *American Behavioral Scientist* 25(6): 717-724.
- Feinman, Gary M.
 2000 Corporate/Network: New Perspectives on Models of Political Action and the Puebloan Southwest. In *Social Theory in Archaeology*, edited by Michael Brian Schiffer, pp. 31-63. The University of Utah Press, Salt Lake City.
- Fernandes, Ricardo, Geert Geeven, Steven Soetens, and Vera Klontza-Jaklova.
 2011 Deletion/Substitution/Addition (DSA) Model Selection Algorithm Applied to the Study of Archaeological Settlement Patterning. *Journal of Archaeological Science* 38: 2293-2300.
- Fisher, Robin
 1996 Contact and Trade, 1774-1849. In *The Pacific Province: A History of British Columbia*, edited by Hugh J.M. Johnston, pp. 48-67. Douglas and McIntyre, Vancouver.
- Fladmark, K.R.
 1982 Microdebitage Analysis: Initial Considerations. *Journal of Archaeological Science* 9: 205-220.
- Fletcher, Richard
 2008 Some Spatial Analyses of Chalcolithic Settlement in Southern Israel. *Journal of Archaeological Science* 35: 2048-2058.

Fortes, M.

- 1958 Introduction. In *The Development Cycle in Domestic Groups*, Cambridge Papers in Social Anthropology 1, edited by J. Goody, pp. 1-14. Cambridge University, Cambridge.

Foster, Bradley J., and Catherine P. Foster

- 2012 Introduction: Household Archaeology in the Near East and Beyond. In *New Perspectives on Household Archaeology*, edited by Bradley J. Parker and Catherine P. Foster, pp. 1-14. Eisenbrauns, Wiconia Lake.

Gahr, D. Ann Trieu, Elizabeth A. Sobel, and Kenneth M. Ames

- 2006 Introduction. In *Household Archaeology on the Northwest Coast*, edited by Elizabeth A. Sobel, D. Ann Trieu Gahr, and Kenneth M. Ames, pp. 1-15. International Monographs in Prehistory, Anne Arbor.

Gilbert, B. Miles

- 1990 *Mammalian Osteology*. Missouri Archaeological Society, Columbia.

Gillespie, Susan D.

- 2000a Beyond Kinship: An Introduction. In *Beyond Kinship: Social and Material Reproduction in House Societies*, edited by Rosemary A. Joyce and Susan D. Gillespie, pp. 1-21. University of Pennsylvania Press, Philadelphia.
- 2000b Lévi-Strauss: *Maison* and *Société à Maisons*. In *Beyond Kinship: Social and Material Reproduction in House Societies*, edited by Rosemary A. Joyce and Susan D. Gillespie, pp. 22-52. University of Pennsylvania Press, Philadelphia.

Grier, Colin

- 2006 Temporality in Northwest Coast Households. In *Household Archaeology on the Northwest Coast*, edited by Elizabeth A. Sobel, D. Ann Trieu Gahr, and Kenneth M. Ames, pp. 97-119. International Monographs in Prehistory, Anne Arbor.

Hamilton, Phillip, Kristen Barnett, Alexandra Williams, and Anna Prentiss

- 2013 *Knapping on the Roof: Spatial Analysis of Materials from the Housepit 54 Final Roof, Bridge River Site, British Columbia*. Poster presented at SAA Conference.

Hayden, Brian

- 1992 Introduction: Ecology and Culture. In *A Complex Culture of the British Columbia Plateau: Traditional Stl'atl'imx Resource Use*, edited by Brian Hayden, pp. 3-46.
- 1997 *The Pithouse of Keatley Creek*. Harcourt Brace and Company, Fort Worth.
- 1998 Practical and Prestige Technologies: The Evolution of Material Systems. *Journal of Archaeological Method and Theory* 5(1): 1-55

- 2000a The Opening of Keatley Creek: Research Problems and Background. *In The Ancient Past of Keatley Creek, Volume I, Taphonomy*, edited by B. Hayden, pp. 1-34. Archaeology Press, Burnaby, B.C.
- 2000b Socioeconomic Factors Influencing Housepit Assemblages. *In The Ancient Past of Keatley Creek, vol. 2.: Socioeconomy*, edited by Brian Hayden, pp. 189-202. Archaeology Press, Burnaby, B.C.
- 2000c An Overview of the Classic Lillooet Occupation at Keatley Creek. *In The Ancient Past of Keatley Creek, Volume II, Socioeconomy*, edited by B. Hayden, pp. 255-286. Archaeology Press, Burnaby, B.C.
- 2005 The Emergence of Large Villages and Large Residential Corporate Group Structures among Complex Hunter-Gatherers at Keatley Creek. *American Antiquity* 70(1): 169-174.
- Hayden, Brian, Edward Bakewell, and Rob Gargett
 1996 The World's Longest-Lived Corporate Group: Lithic Analysis Reveals Prehistoric Social Organization near Lillooet, British Columbia. *American Antiquity* 61(2): 341-356.
- Hayden, Brian, and Aubrey Cannon
 1982 The Corporate Group as an Archaeological Unit. *Journal of Anthropological Archaeology* 1: 132-158.
- Hayden, Brian, and Martin Handly
 2000 The Analysis of Mesodebitage and Mesofauna at Keatley Creek. *In The Ancient Past of Keatley Creek, Volume II Socioeconomy*, edited by Brian Hayden, pp. 143-150. Archaeology Press, Burnaby, B.C.
- Hayden, Brian, and W. Karl Hutchings
 1989 Whither the Billet Flake? *In Experiments in Lithic Technology*, edited by D. Amick and R. Mauldin, pp. 235-257. BAR International Press Series 528, Oxford.
- Hayden, Brian, and June Ryder
 1991 Prehistoric Cultural Collapse in the Lillooet Area. *American Antiquity* 56(1): 50-65.
- Hayden, Brian, and R. Schulting
 1997 The Plateau Interaction Sphere and Late Prehistoric Cultural Complexity. *American Antiquity* 62(1): 51-85.
- Hayden, Brian, and Jim Spafford
 1993 The Keatley Creek Site and Corporate Group Archaeology. *BC Studies* 99: 106-139.

- Hoffman, Brian W., Jessica M.C. Czederpiltz, and Megan A. Partlow
 2000 Heads or Tails: The Zooarchaeology of Aleut Salmon Storage on Unimak Island, Alaska. *Journal of Archaeological Science* 27: 699-708.
- Horne, Lee
 1982 The Household in Space: Dispersed Holdings in an Iranian Village. *American Behavioral Scientist* 25(6): 677-685.
- Johnson, G.A.
 1989 Dynamics of Southwestern Prehistory: Far Outside – Looking In. *In Dynamics of Southwestern Prehistory*, edited by L.S. Cordell and G.J. Gumerman, pp. 371-389. Smithsonian Institution Press, Washington, D.C.
- Joyce, Rosemary A.
 2000 Heirlooms and Houses: Materiality and Social Memory. *In Beyond Kinship: Social and Material Reproduction in House Societies*, edited by Rosemary A. Joyce and Susan D. Gillespie, 189-212. University of Pennsylvania Press, Philadelphia.
- Karklins, Karlis
 1985 Glass Beads: The Levin Catalogue of Mid-19th Century Beads. A Sample book of 19th Century Venetian Beads. Guide to the Description and Classification of Glass Beads, Minister of Supply and Services Canada.
- Klimko, Olga
 2004 Fur Trade Archaeology in Western Canada: Who Is Digging up the Forts? *In The Archaeology of Contact in Settler Societies*, edited by Tim Murray, pp. 157-175. Cambridge University Press, Cambridge.
- Knudson, R.
 1983 *Organizational variability in Late Paleo-Indian Assemblages*. WSU Laboratory of Anthropology Reports of Investigations No. 60, Pullman.
- Kramer, Carol
 1982 Ethnographic Households and Archaeological Interpretation. *American Behavioral Scientist* 25(6): 663-675.
- Kuijt, Ian and W. C. Prentiss
 2004 Villages on the Edge: Pithouses, Cultural Change, and the Abandonment of Aggregate Pithouse Villages. *In Complex Hunter- Gatherers: Evolution and Organization of Prehistoric Communities on the Plateau of Northwestern North America*, edited by W.C. Prentiss and Ian Kuijt, pp. 155-170. University of Utah Press, Salt Lake City

Kusmer, Karla D.

2000a Animal Resource Utilization and Assemblage Formation Processes. In *The Ancient Past of Keatley Creek, vol 1. Taphonomy*, edited by Brian Hayden, pp. 135-161. Archaeology Press, Burnaby, B.C.

2000b Zooarchaeological Analysis at Keatley Creek II. Socioeconomy. In *The Ancient Past of Keatley Creek, vol. 2.:Socioeconomy*, edited by Brian Hayden, pp. 119-134. Archaeology Press, Burnaby, B.C.

Laforet, Andrea and Annie York

1981 Notes on the Thompson Winter Dwelling. In *The World is Sharp as a Knife: An Anthology in Honor of Wilson Duff*, edited by D. Abbott, pp. 115-122. British Columbia Provincial Museum, Victoria.

LaMotta, Vincent M., and Michael B. Schiffer

1999 Formation Processes of House Floor Assemblages. In *The Archaeology of Household Activities*, edited by Penelope M. Allison, pp. 19-29. Routledge, New York.

Lepofsky, Dana, Karla Kusmer, Brian Hayden, and Ken Lertzman

1996 Reconstructing Prehistoric Socioeconomies from Paleoethnobotanical and Zooarchaeological Data: An Example from the British Columbia Plateau. *Journal of Ethnobiology* 16:31-62.

Lepofsky, Dana, David M. Schaepe, Anthony P. Graesch, Michael Lenert, Patricia Ormerod, Keith Thor Carlson, Jeanne E. Arnold, Michael Blake, Patrick Moore, and John J. Claque

2009 Exploring Stó:lō-Coast Salish Interaction and Identity in Ancient Houses and Settlements in the Fraser Valley, British Colombia. *American Antiquity* 74(4): 595-626.

Lévi-Strauss, Claude

1982 *The Way of the Masks*. Translated by Sylvia Modelski. University of Washington Press, Seattle.

Lyman, R. Lee

1987 Archaeofaunas and Butchery Studies: A Taphonomic Perspective. *Advances in Archaeological Method and Theory* 10: 249-337.

MacDonald, Richard

2000a Structural Strategies for Pithouses on the Keatley Creek Site. Socioeconomy. In *The Ancient Past of Keatley Creek, Volume II Socioeconomy*, edited by Brian Hayden, pp. 221-238. Archaeology Press, Burnaby, B.C.

- 2000b Body Heat as a strategy for winter Survival in Housepits. Socioeconomy. In *The Ancient Past of Keatley Creek, Volume II Socioeconomy*, edited by Brian Hayden, pp. 239-254. Archaeology Press, Burnaby, B.C.
- Madrigal, T. Cregg, and Julie Zimmermann Holt
 2002 White-Tailed Deer Meat and Marrow Return Rates and Their Applications to Eastern Woodlands Archaeology. *American Antiquity* 67(4): 745-759.
- Marshall, Fiona, and Tom Pilgram
 1991 Meat Versus Within-Bone Nutrients: Another Look at the Meaning of Body Part Representation in Archaeological Sites. *Journal of Archaeological Science* 18: 149-163.
- Marshall, Yvonne
 1989 The House in Northwest Coast, Nuuchah-Nulth Society: The Material Structure of Political Action. In *Households and Communities*, edited by Scott MacEachern, David J.W. Archer, and Richard D. Garvin, pp. 15-21. University of Calgary Archaeological Association, Calgary.
- 2000 Transformations of Nuuchah-nulth Houses. In *Beyond Kinship: Social and Material Reproduction in House Societies*, edited by Rosemary A. Joyce and Susan D. Gillespie, 73-102. University of Pennsylvania Press, Philadelphia.
- Mauldin, Raymond P., and Daniel S. Amick
 1989 Investigating Patterning in Debitage from Experimental Biface Core Reduction. In *Experiments in Lithic Technology*, edited by D. Amick and R. Mauldin, pp. 67-88. BAR International Series, Oxford.
- Middleton, William D.
 2000 Chemical Identification of Activity Areas. In *The Ancient Past of Keatley Creek, Volume II Socioeconomy*, edited by Brian Hayden, pp. 103-118. Archaeology Press, Burnaby, B.C.
- Morgan, Henry Lewis
 1881 *Houses and House-Life of the American Aborigines*. University of Chicago, Chicago.
- Morin, Jesse, Ryan Dickie, Takashi Sakaguchi, and Jamie Hoskins
 2009 Late Prehistoric Settlement Patterns and Population Dynamics along the Mid-Fraser. *BC Studies* 160: 9-34.
- Nelson, Edward William
 1900 *The Eskimo about Bering Strait*. Smithsonian Press, Washington D.C.

- Netting, Robert McC., Richard R. Wilk, and Eric J. Arnould
 1984 Introduction. *In Households: Comparative and Historical Studies of the Domestic Group*, edited by Robert McC. Netting, Richard R. Wilk, and Eric J. Arnould, pp. xiii-xxxviii.
- Odell, George H.
 2003 *Lithic Analysis*. Springer, New York.
- Outram, Alan K.
 2001 A New Approach to Identifying Bone Marrow and Grease Exploitation: Why the “Indeterminate” Fragments Should Not Be Ignored. *Journal of Archaeological Science* 28: 401-410.
- Partlow, Megan A.
 2006 Sampling Fish Bones: A Consideration of the Importance of Screen Size and Disposal Context in the North Pacific. *Arctic Anthropology* 43(1): 67-79.
- Prentiss, Anna Marie, Eric Carlson, Nicole Crossland, Hannah Schremser, and Lee Reininghaus
 2009 *Report of the 2008 University of Montana Investigations at the Bridge River site (EeR14)*. Report on file, Bridge River Band Office, Lillooet, B.C.
- Prentiss, Anna Marie, James C. Chatters, Natasha Lyons, and Lucille E. Harris
 2011 Archaeology in the Middle Fraser Canyon, British Columbia: Changing Perspectives on Paleoecology and Emergent Cultural Complexity. *Canadian Journal of Archaeology* 35: 143-174.
- Prentiss, Anna Marie, Guy Cross, Thomas Foor, Mathew Hogan, Dirk Markle, and David S. Clarke
 2008 Evolution of a Late Prehistoric Winter Village on the Interior Plateau of British Columbia: Geophysical Investigations, Radiocarbon Dating, and Spatial Analysis of the Bridge River Site. *American Antiquity* 73(1): 59-81.
- Prentiss, Anna Marie, Thomas A. Foor, Guy Cross, Lucille E. Harris, and Michael Wanzenried
 2012 The Cultural Evolution of Material Wealth-Based Inequality at Bridge River, British Columbia. *American Antiquity* 77(3): 542-564.
- Prentiss, Anna Marie, Nathan Goodale, Lucille E. Harris, and Nicole Crossland
 2013 The Evolution of Ground Slate Tool Industry at the Bridge River Site, British Columbia. *In Lithic Technological Systems: Stone, Evolution, and Behavior*, edited by Nathan B. Goodale and William Andrefsky Jr., Cambridge University Press, Cambridge (In press).

- Prentiss, Anna Marie, and Ian Kuijt
2012 *People of the Middle Fraser Canyon: An Archaeological History*. UBC Press, Vancouver.
- Prentiss, William C., and Ian Kuijt
2004 The Evolution of Collector Systems on the Canadian Plateau. In *Complex Hunter-Gatherers: Evolution and Organization of Prehistoric Communities on the Plateau of Northwestern North America*, edited by William C. Prentiss and Ian Kuijt, pp. 49-66. University of Utah Press, Salt Lake City.
- Prentiss, Anna Marie, Natasha Lyons, Lucille E. Harris, Melisse R.P. Burns, and Terrence M. Godin
2007 The Emergence of Status Inequality in Intermediate Scale Societies: A Demographic and Socio-Economic History of the Keatley Creek Site, British Columbia. *Journal of Anthropological Archaeology* 26: 299-327.
- Prentiss, Anna Marie, Lisa Smith, Kristen Barnett, Matthew Walsh, and Eric Carlson
2012 Assessing Variability in Salmon Processing, Storage, and Consumption at the Bridge River Site, British Columbia. Paper presented at the 77th Annual Meeting of the Society for American Archaeology, Memphis.
- Prentiss, Anna Marie, Lisa Smith, Lee Reininghaus, Maggie Schirack, Michael Wanzenried, and Ogden Ward
2010 *Report of the 2009 University of Montana Investigations at the Bridge River Site (EeR14)*. Report on file, National Science Foundation and Bridge River Band, Lillooet, B.C.
- Prentiss, William C.
1998 The Reliability and Validity of a Lithic Debitage Typology: Implications for Archaeological Interpretation. *American Antiquity* 63(4): 635-650.
- Prentiss, William C., Michael Lenert, Thomas A. Foor, and Nathan B. Goodale
2005 The Emergence of Complex Hunter-Gatherers on the Canadian Plateau: A Response to Hayden. *American Antiquity* 70(1): 175-180.
- Pugh, Timothy W.
2003 A Cluster and Spatial Analysis of Ceremonial Architecture at Late Postclassic Mayapán. *Journal of Archaeological Science* 30: 941-953.
- Reitz, Elizabeth J., and Elizabeth S. Wing
2008 *Zooarchaeology*. Cambridge University Press, Cambridge.
- Richards, T., and M.K. Rousseau
1987 Late Prehistoric Cultural Horizons on the Canadian Plateau. Publication No. 16, Simon Fraser University, Burnaby, BC.

Rogers, Alan R., and Jack M. Broughton

- 2001 Selective Transport of Animal Parts by Ancient Hunters: A New Statistical Method and an Application to the Emeryville Shellmound Fauna. *Journal of Archaeological Science* 28: 763-773.

Roth, Eric Abella

- 1989 The Developmental Cycle of Toposa Agro-Pastoralists Household. In *Households and Communities*, edited by Scott MacEachern, David J.W. Archer, and Richard D. Garvin, pp. 45-50. University of Calgary Archaeological Association, Calgary.

Rousseau, Mike K.

- 2004 A Culture Historic Synthesis and Changes in Human Mobility, Sedentism, Subsistence, Settlement, and Population on the Canadian Plateau, 7000-200 B.P. In *Complex Hunter-Gatherers: Evolution and Organization of Prehistoric Communities on the Plateau of Northwestern North American*, edited by William C. Prentiss and Ian Kuijt, pp. 3-22. The University of Utah Press, Salt Lake City.

Rua, Helena

- 2009 Geographic Information Systems in Archaeological Analysis: A Predictive Model in the Detection of Rural Roman *Villae*. *Journal of Archaeological Science* 36: 224-235.

Samuels, Stephan R.

- 1989 Spatial Patterns in Ozette Longhouse Floor Middens. In *Households and Communities*, edited by Schott MacEachern, David J.W. Archer, and Richard D. Garvin, pp. 143-156. University of Calgary Archaeological Association, Calgary.
- 2006 Ozette Household Production. In *Household Archaeology on the Northwest Coast*, edited by Elizabeth A. Sobel, D. Ann Trieu Gahr, and Kenneth M. Ames, pp. 200-233. International Monographs in Prehistory, Anne Arbor.

Sandstorm, Alan R.

- 2000 Toponymic Groups and House Organization: the Nahuas of Northern Veracruz, Mexico. In *Beyond Kinship: Social and Material Reproduction in House Societies*, edited by Rosemary A. Joyce and Susan D. Gillespie, 53-72. University of Pennsylvania Press, Philadelphia.

Schiffer, Michael B.

- 1972 Archaeological Context and Systemic Context. *American Antiquity* 37(2): 156-165.

Shepard, Jon, and Bob Muir

- 2010 "Oh, I've Seen One Way Bigger Than That.": Current Research on Housepit Settlement Patterns in the Mid-Fraser Region of BC. *The Midden* 42(3): 3-8.

- Shipman, Pat, Giraud Foster, and Margaret Schoeninger
 1984 Burnt Bones and Teeth: An Experimental Study of Color, Morphology, Crystal Structure and Shrinkage. *Journal of Archaeological Science* 11: 307-325.
- Smith, Lisa M.
 2011 Report of the 2010 University of Montana Investigations at the S7istken Site, Mid-Fraser Region, B.C. The University of Montana, Missoula.
- Smith, Lisa M. and Eric S. Carlson
 2012 *Preliminary Results of Investigations at the S7i7stkn (Little Pithouse) Site, Middle Fraser Region, British Columbia*. Poster presented at SAA Conference.
- Smith, Marian W.
 1947 House Types of the Middle Fraser River. *American Antiquity* 12(4): 255-267.
- Spafford, Jim
 2000 Patterns in Lithic Artifact Distributions and the Social Organization of Space on Housepit Floors. In *The Ancient Past of Keatley Creek, Volume II Socioeconomy*, edited by Brian Hayden, pp. 167-178. Archaeology Press, Burnaby, B.C.
- Springer, Chris and Dana Lepofsky
 2011 Pithouses and People: Social Identity and Pithouses in the Harrison River Valley of Southwestern British Columbia. *Canadian Journal of Archaeology* 35(1): 18-54.
- Stahl, Peter W. and James A. Zeilder
 1990 Differential Bone-Refuse Accumulation in Food-Food Preparation and Traffic Areas on an Early Ecuadorian House Floor. *Latin American Antiquity* 1(2): 150-169.
- Stryd, Arnoud H.
 1972 Housepit Archaeology in Lillooet, British Columbia: The 1970 Field Season. *BC Studies* 14:17-46.
- Stryd, Arnoud H., and J. Baker
 1968 Salvage Excavation at Lillooet, British Columbia. *Syesis* 1:47- 56.
- Stryd, Arnoud H., and S. Lawhead
 1978 *Reports of the Lillooet Archaeological Project*. National Museum of Man, Mercury Series No. 73. National Museum of Canada, Ottawa.
- Stryd, Arnoud H. and Mike K. Rousseau
 1996 The Early Prehistory of the Mid Fraser-Thompson River Area. In *Early Human Occupation in British Columbia*, edited by Roy L. Carlson and Luke Dalla Bona, pp. 117-204. University of British Columbia Press, Vancouver.

Sullivan, Alan P., and Kenneth C. Rozen

1985 Debitage Analysis and Archaeological Interpretation. *American Antiquity* 50(4): 755-779.

Teit, James

1900 *The Thompson Indians of British Columbia*. Memoirs Vol. 2, No. 4, pp. 163-392. American Museum of Natural History, New York.

1906 *The Lillooet Indians*. Memoirs Vol. 2, No. 5, pp. 193-300. American Museum of Natural History, New York.

1909 *The Shuswap*. Memoirs Vol. 2, No. 7, pp. 443-813. American Museum of Natural History, New York.

Wilk, Richard R., and Robert McC. Netting

1984 Households: Changing Forms and Functions. . *In* Households: Comparative and Historical Studies of the Domestic Group, edited by Robert McC. Netting, Richard R. Wilk, and Eric J. Arnould, pp. 1-28.

Wilk, Richard R., and William L. Rathje

1982 Household Archaeology. *American Behavioral Scientist* 25: 617-639.

Yanagisako, Sylvia Junko

1979 Family and Household: The Analysis of Domestic Groups. *Annual Review of Anthropology* 8:161-205.

APPENDIX A: GIS METHODOLOGY

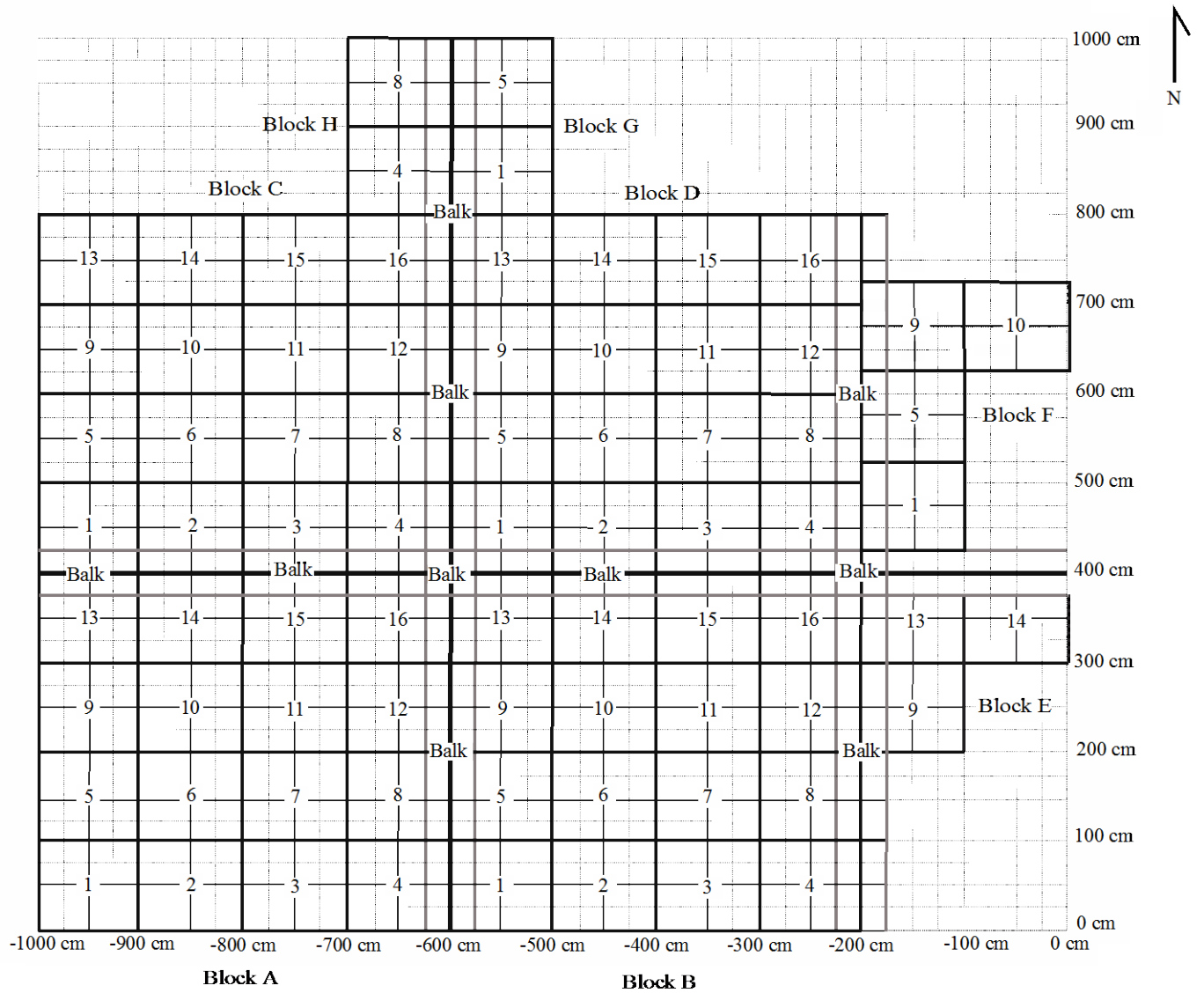


Figure A.1. HP 54 Grid

Lithic GIS Coding Criteria

Table A.1. Debitage Flake Type

Reduction Strategy	Flake Type	GIS Code
Distinctive Typology Approach	Non-orientable	n/o
	Medial/distal	m/d
	Split	s
	Proximal	p
	Complete	c
Cortex Cover	Primary	primary
	Secondary	secondary
	Tertiary	tertiary
Fracture Initiation	Cone	cone
	Bend	bend
	Wedge	wedge

Table A.2. Artifact Type

Artifact Category	Artifact Type	GIS Code
Scraper	Scraper	scraper
Cutting Implements	Biface	biface
	Knife	knife
	Utilized flake	flake
Projectile Points	Shuswap point	s_point
	Plateau point	p_point
	Kamloops point	k_point
	Point	point
Piercers and Drills	Piercer	piercer
	Drill	drill
Abraders	Abrader	abrader
Adzes	Adze	adze
Blades	Blade	blade
Bladelets	Bladelet	bladelet
Hammerstones	Hammerstone	hammerstone
Metates	Metate	metate
Spindle Whorls	Spindle whorl	whorl
Unknown	Unknown	unknown
Wedges	Wedge	wedge
	Wedge/scraper	wedge_scraper
Prestige Items	Bead	bead

Cores	Pipe	pipe
	Figurine	figurine
	Unidirectional core	uni_core
	Multidirectional core	multi_core
	Bipolar core	bipolar_core

Table A.3. Expediency vs. Curation

Level of Curation	GIS Code
Expedient	exp
Formal	formal
Unknown	unknown

Table A.4. Lithic Material Type

Material Type	GIS Code
Basalt	basalt
Chalcedony	chalcedony
Yellow Chalcedony	chalcedony_yellos
Chert	chert
Green Chert	chert_green
Copper	copper
Dacite	dacite
Greenstone	greenstone
Igneous Intrusive	igneus_intrusive
Jasper	jasper
Hatcreek Jasper	jasper_hat
Obsidian	obsidian
Orthoquartzite	orthoquartzite
Pisolite	pisolite
Quartzite	quartzite
Serpentine	serpentine
Shale	shale
Silicified Wood	silicified_wood
Slate	slate

Table A.5. Local vs. Non-Local Materials

Material	Locality	GIS Code
Basalt	Local	local
Green Chert		
Copper		
Dacite		
Greenstone		
Igneous Intrusive		
Orthoquartzite		
Quartzite		
Serpentine		
Shale		
Slate		
Hatcreek Jasper	Non-Local	non
Obsidian		
Pisolite		
Chalcedony	Unknown	unknown
Yellow Chalcedony		
Chert		
Jasper		
Silicified Wood		

Table A.6. Material Utility

Material	Utility	GIS Code
Basalt	Low	low
Igneous Intrusive		
Quartzite		
Chert	Medium	medium
Green Chert		
Dacite		
Jasper		
Chalcedony	High	high
Yellow Chalcedony		
Copper		
Dacite		
Greenstone		
Jasper		
Hatcreek Jasper		
Obsidian		
Pisolite		
Serpentine		
Silicified Wood		
Shale		
Slate		

Table A.7. Lithic Debitage Size Grade

Size Grade	GIS Code
<1 square cm	xsmall
1-2 square cm	small
4-16 square cm	medium
16-64 square cm	large
>64 square cm	xlarge

Historic GIS Coding Criteria

Table A.8. Historic Artifact Type

Artifact Type	GIS Code
Glass fragment	unknown
Metal fragment	unknown
Bead	bead

Table A.9. Historic Artifact Material Type

Material	GIS Code
Glass	glass
Metal	metal

Table A.10. Bead Design

Design	GIS Code
Compounded	compounded
Simple	simple

Table A.11. Bead Opacity

Opacity	GIS Code
Opaque	opaque
Translucent	translucent

Table A.12. Bead Color

Color	GIS Code
Blue	blue
Green	green
Red	red
White	white
Stripe	stripe

Faunal GIS Coding Criteria

Table A.13. Species and Species Utility

Class/Order	Taxa	GIS Code	Utility
Salmoninae	Oncorhynchus sp.	oncorhynchus_sp	high
	cf. Oncorhynchus tshawytscha	oncorhynchus_tshaw	high
	Salmonid (trout-sized)	salmonid	medium
Artiodactyla	Odocoileus sp.	odocoileus	high
	Ovis canadensis	ovis	high
	Cervidae	cervidae	high
	Artiodactyl	artiodactyl	high
Mammalia	Large	l_mammal	high
	Medium/large	ml_mammal	medium
	Medium	m_mammal	medium
	Small	s_mammal	low
	Mammal	mammal	unknown
Carnivora	Canis sp.	canis_sp	medium
	Canis latrans	canis_latrans	medium
	Canis lupes	canis_lupes	medium
	Martes pennanti	martes	low
	Mustilis sp.	mustilis	low
	Carnivore	carnivore	low
Rodentia	Castor canadensis	castor	medium
	Neotoma cinerea	neotoma_cinerea	low
	Arvicolinae	arvicolinae	low
	Rodent	rodent	low
Lagamorpha	Lepus sp.	lepus	medium
Aves	Grouse-sized	aves_grouse	medium
	Flicker-sized	aves_flicker	medium
	Aves	aves	medium
Bivalvia	Freshwater shellfish	shell	low
Indeterminate	Indeterminate	indeterminate	unknown

Table A.14. Faunal Element

Element	GIS Code
Antler fragment	antler
Astragulus	astragulus
Calcaneus	calcaneus
Carpal	carpal
Carpal/tarsal	carpal_tarsal
Cancellous fragment	cancellous
Caudal vertebrae	caudal_vert
Cervical vertebra	cerv_vert
Cranial fragment mammal	cranial
Diaphysis	diaphysis
Enamel	enamel
Epiphysis	epiphysis
Femur	femur
Fibula	fibula
Fragment	fragment
Humerus	humerus
Hypural	hypural
Ilium	ilium
Innominate	innominate
Lumbar vertebra	lumbar_vert
Mandible	mandible
Maxilla/mandible	mand_max
Metacarpal	metacarpal
Metapodial	metapodial
Metatarsal	metatarsal
Phalanx	phalanx
Precaudal vertebra	precaudal_vert
Pubis	pubis
Radius	radius
Rib	rib
Rib/ray	rib_ray
Sacrum	sacrum
Scapula	scapula
Tarsal	tarsal
Thoracic vertebra	thoracic_vert
Tibia	tibia
Tibiotarsus	tibiotarsus
Tooth	tooth
Ulna	ulna
Vertebra fragment	vert_fragment

Table A.15. Element Utility

Taxon	Anatomical Region	Utility
Salmon/salmonids	Cranial	low
	Pectoral girdle	low
	Pelvic girdle	low
	Thoracic vertebra	high
	Precaudal vertebra	medium
	Caudal vertebra	medium
	Vertebra fragment	medium
Large mammals, medium/large mammals, and medium mammals	Cranial	low
	Axial (vertebrae, ribs, sternum, scapulae, and innominates)	medium
	Upper-limbs (femur, tibia, humerus, radio-ulna)	high
	Lower limbs (metapodials, carpals, tarsals, and phalanges)	low
	Fragments and cancellous fragments	unknown
Small Mammals	Cranial	low
	Axial (vertebrae, ribs, sternum, scapulae, and innominates)	medium
	Upper-limbs (femur, tibia, humerus, radio-ulna)	high
	Lower limbs (metapodials, carpals, tarsals, and phalanges)	Low
Aves	Cranial	low
	Axial (vertebrae, ribs, pectoral girdle, and pelvic girdle)	medium
	Upper-limbs (femur, tibiotarsus, humerus, radius, ulna)	high

Table A.16 Faunal Size Grade

Size Grade	GIS Code
1-9mm	xxsmall
10-19mm	xsmall
20-29mm	small
30-39mm	medium
40-49mm	large
50-59mm	xlarge
+60mm	xxlarge

Table A.17. Fracture Pattern

Fracture Type	GIS Code
Spiral	spiral
Oblique	oblique
Transverse	transverse
Irregular	irregular
Complete	complete

Table A.18. Burn Stages

Burn Stage	GIS Code
Non-burnt	non_burnt
Black	black
Brown/black	brown_black
Brown	brown
Blue/gray	blue_gray
Gray	gray
White	white

Table A.19. Weathering Stages

Weathering Stage	GIS Code
Stage 1	1
Stage 2	2
Stage 3	3
Stage 4	4
Stage 5	5

Table A.20. Modifications

Modification Type	GIS Code
Cut marks	cut_marks
Drilling	drilling
Grinding	grinding
Polishing	polishing
Rodent gnawing	rodent_gnawing
Carnivore gnawing	carnivore_gnawing

Table A.21. Faunal Artifacts

Artifact Type	GIS Code
Bead	bead
Tool fragment	unknown

APPENDIX B: GIS MAPS

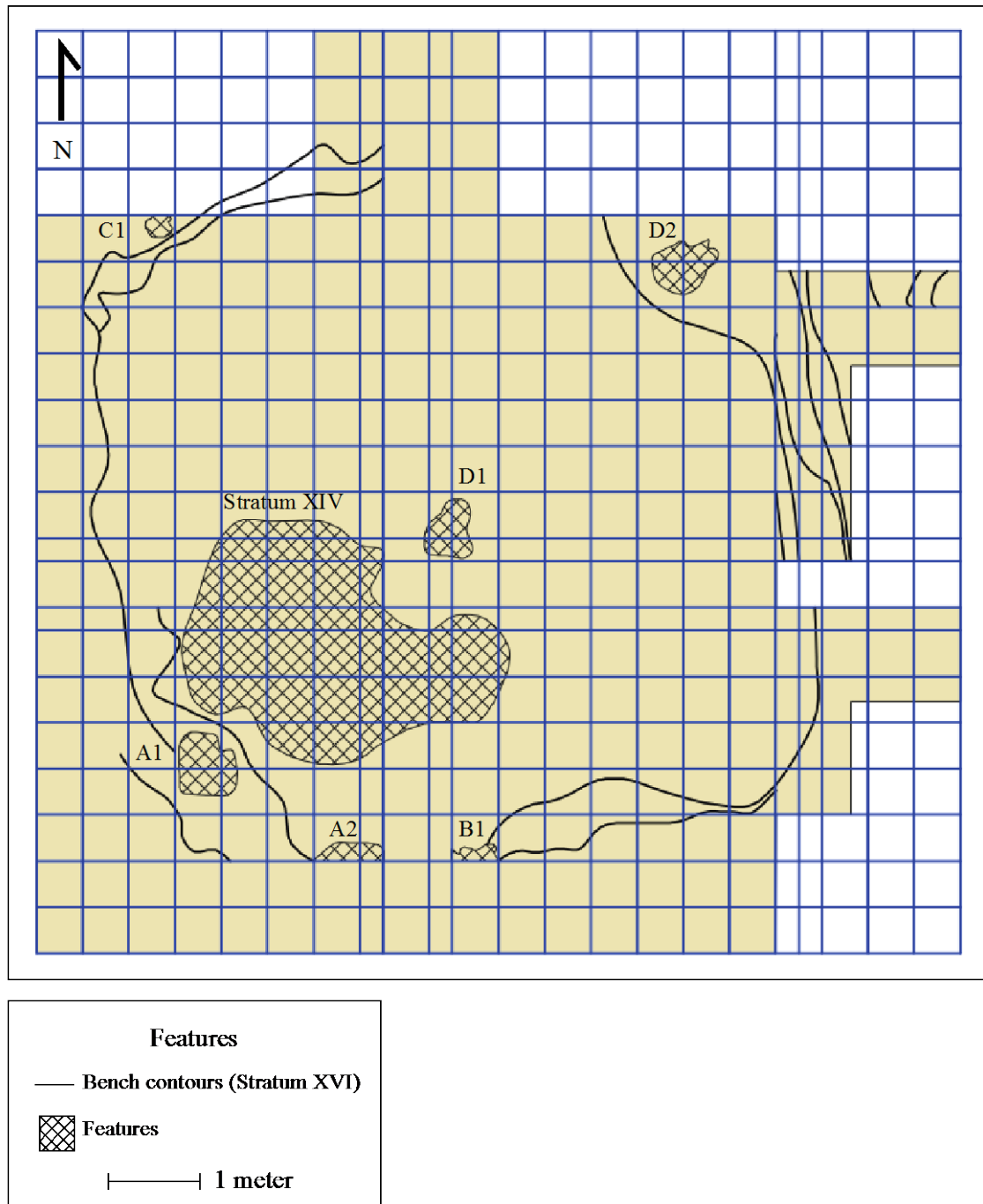


Figure B.1. Feature Distribution.

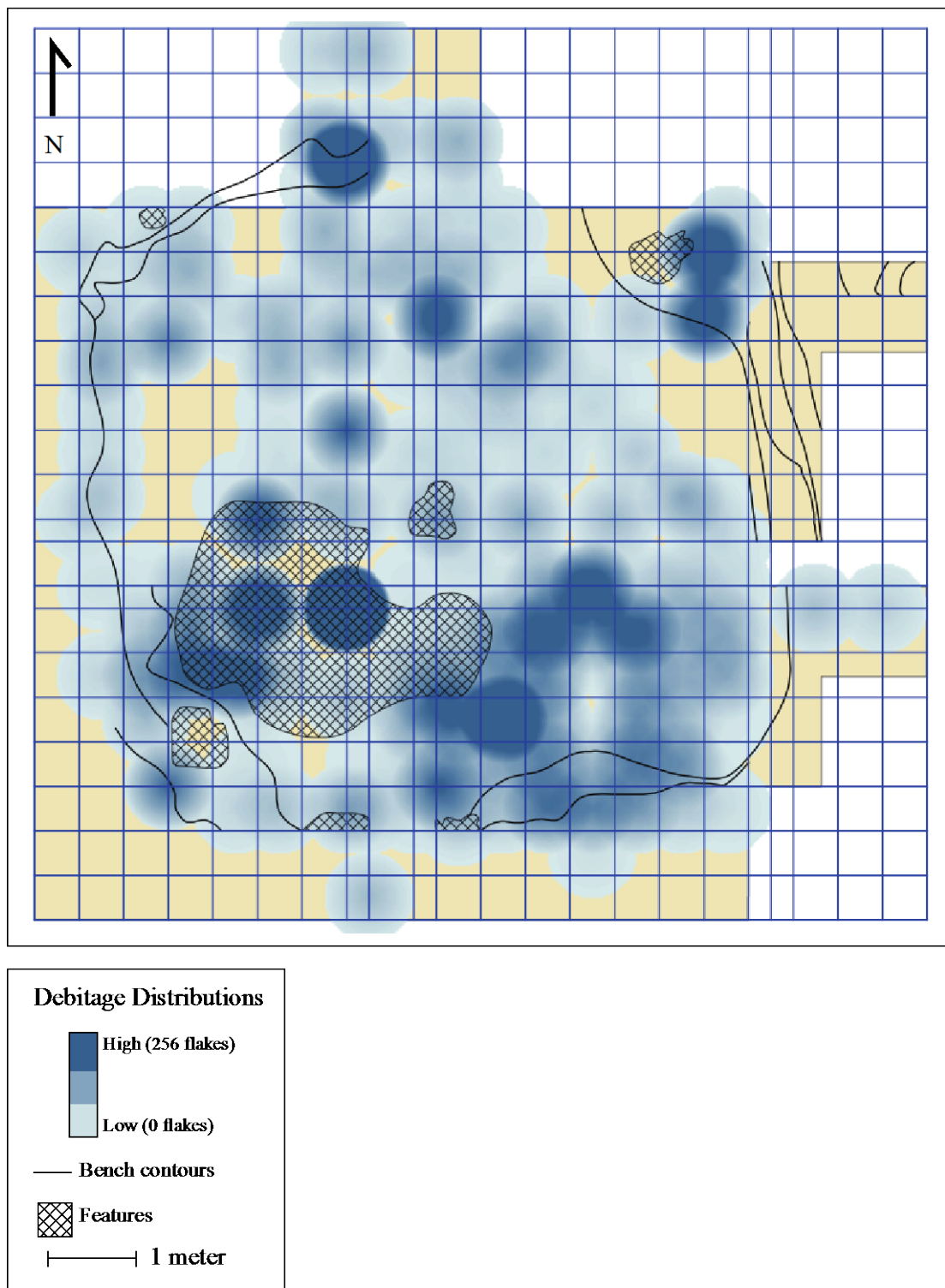


Figure B.2. Debitage Distribution.

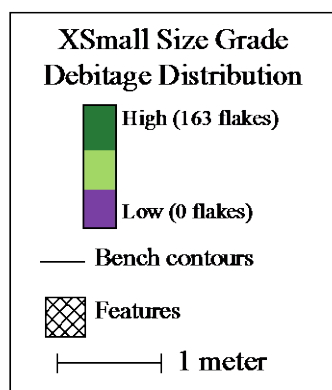
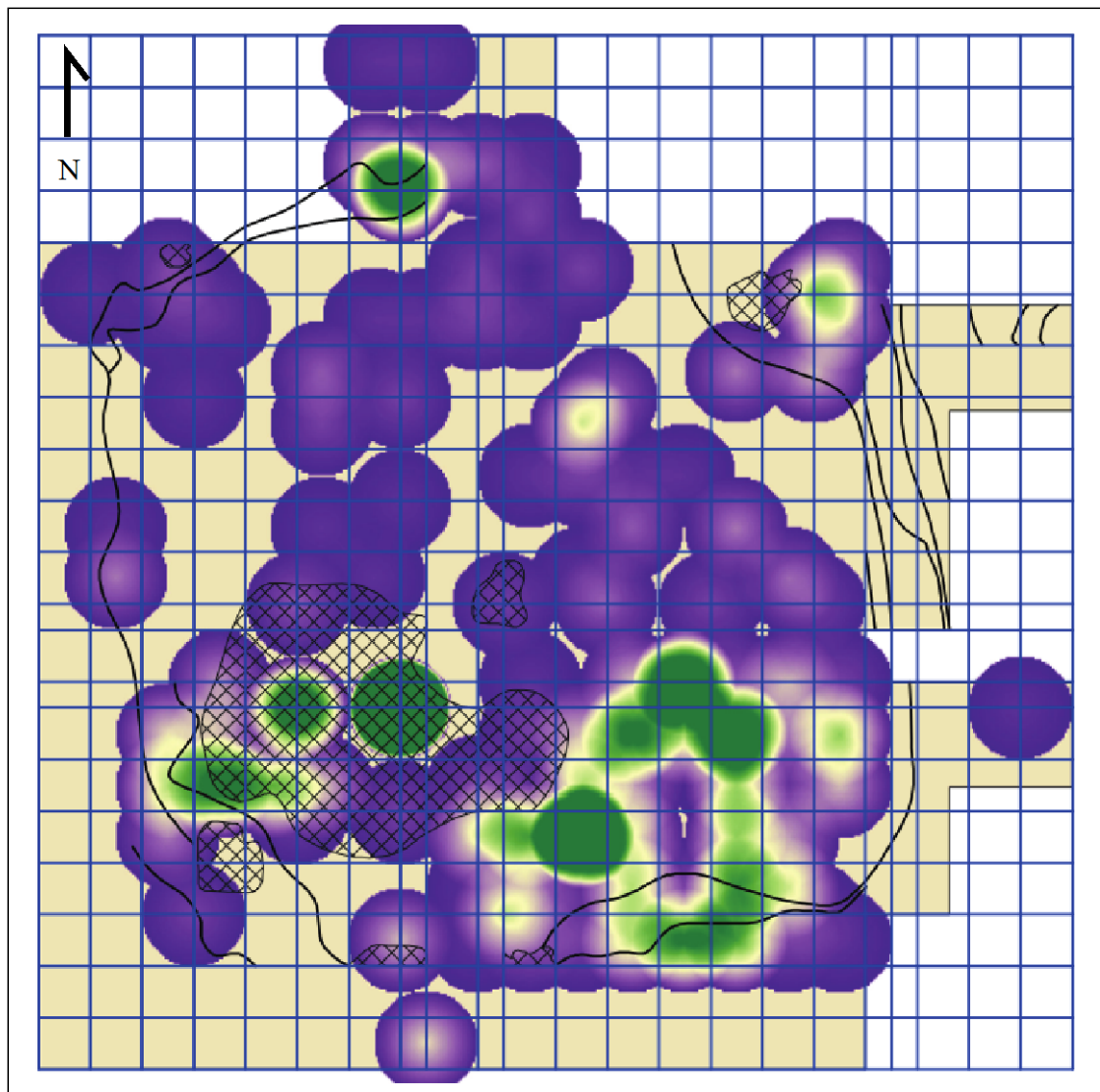


Figure B.3. Debitage Distribution by Size Grade Xsmall.

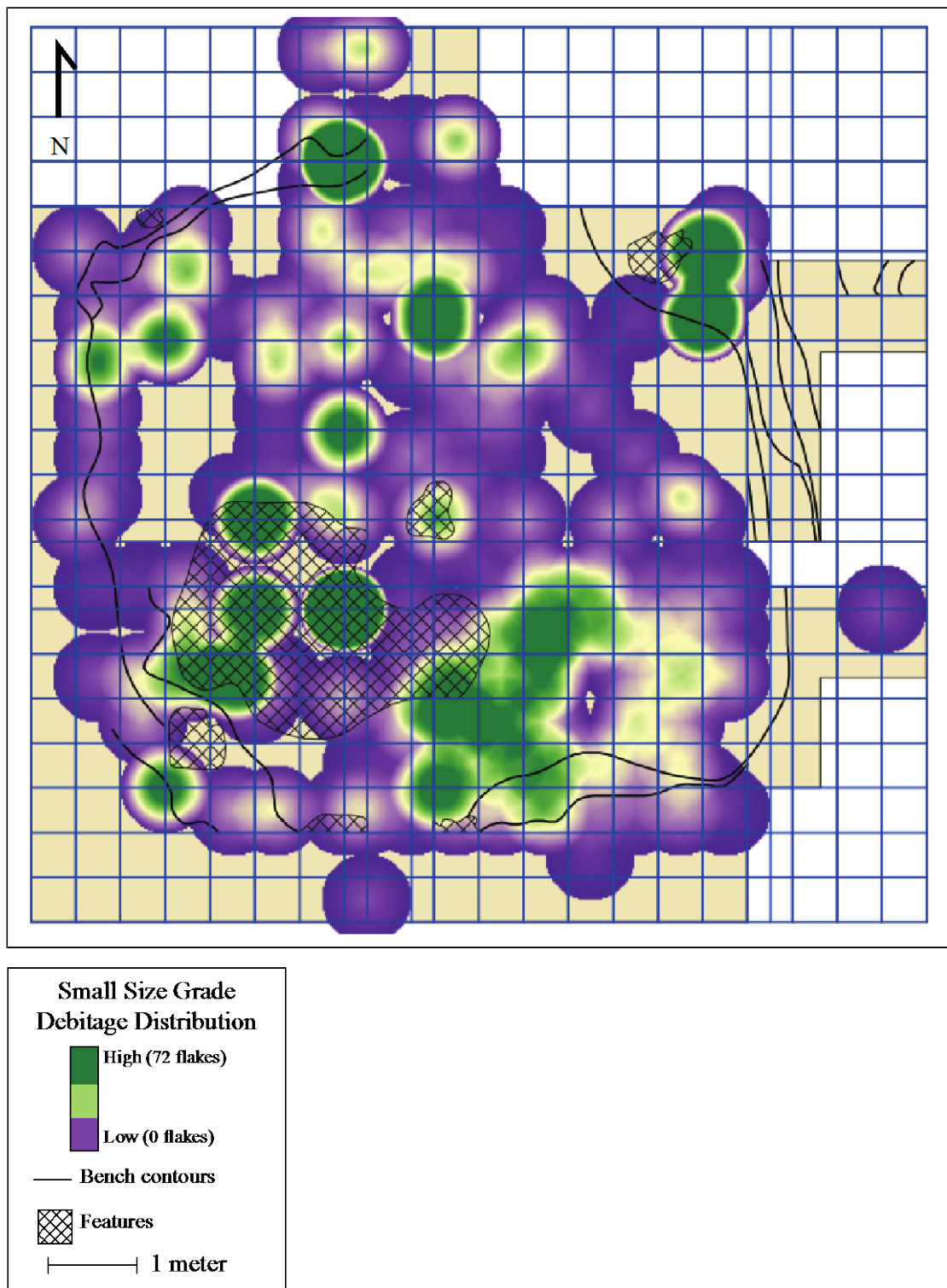


Figure B.4. Debitage Distributions by Size Grade Small.

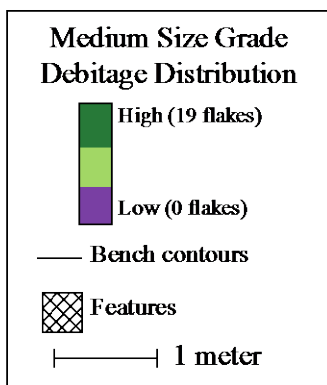
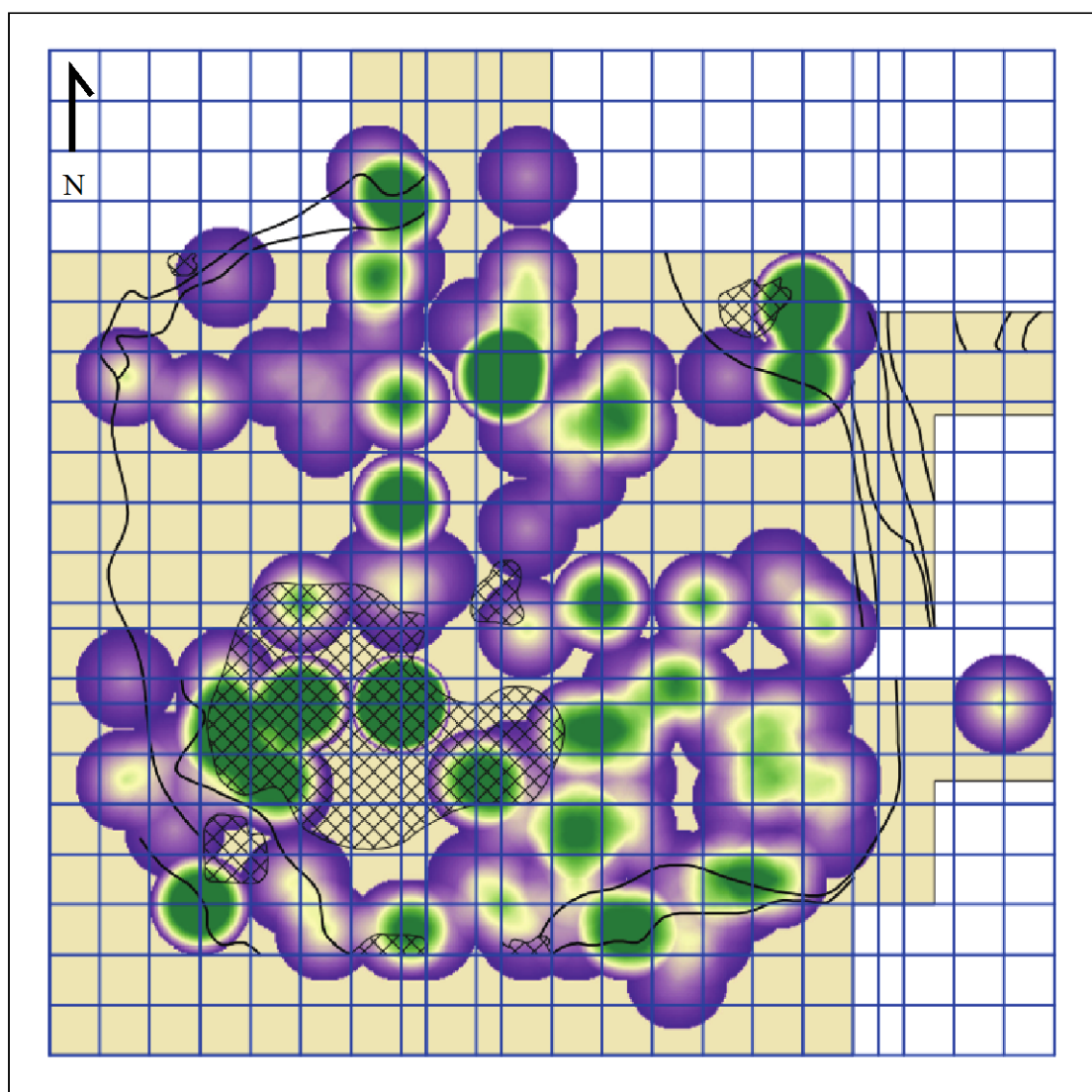


Figure B.5. Debitage Distribution by Size Grade Medium.

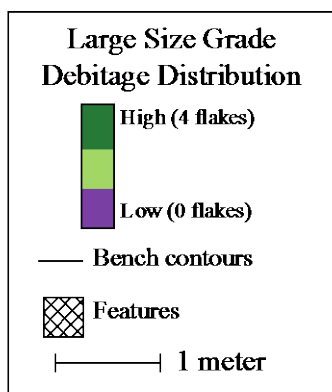
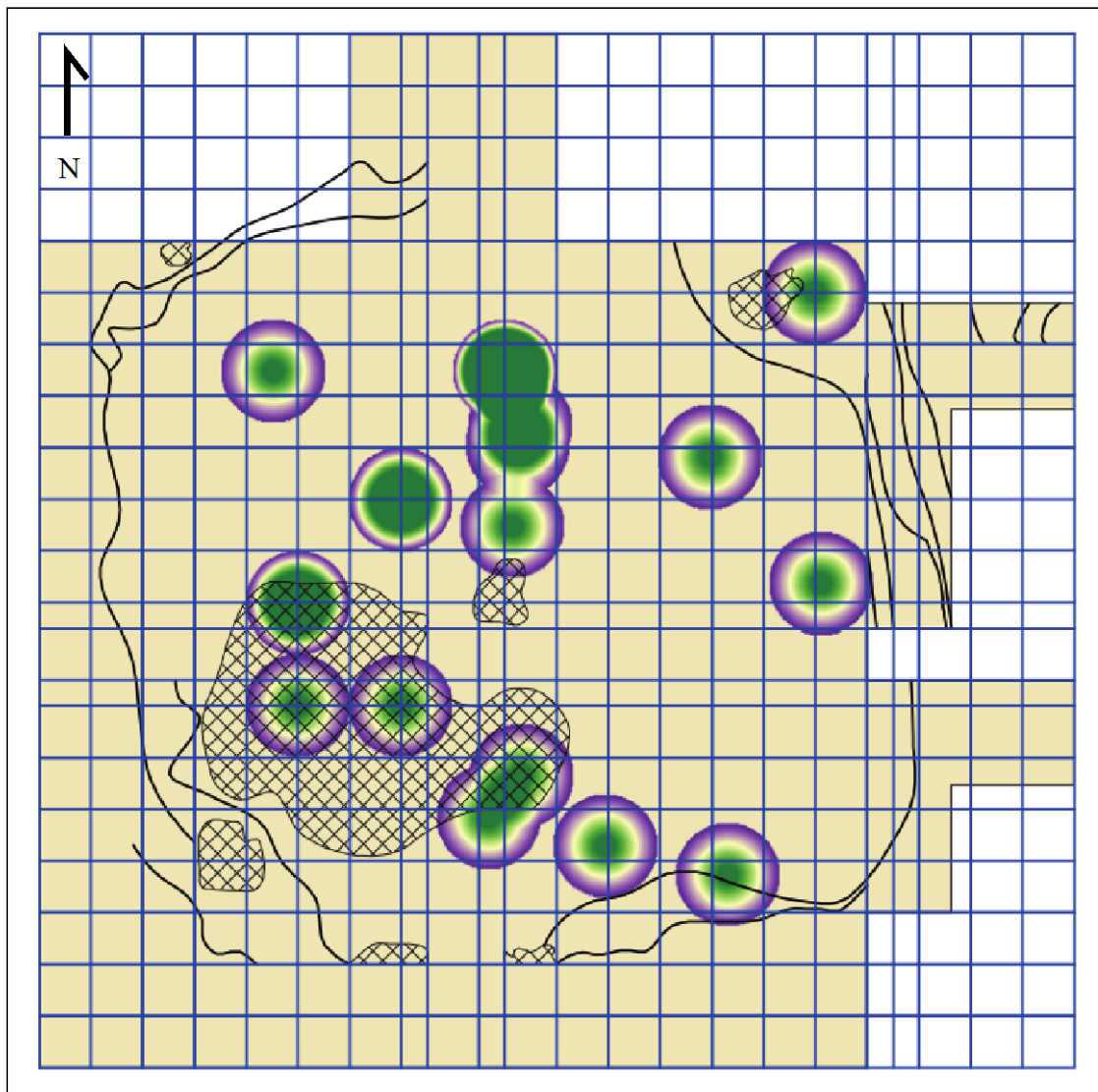


Figure B.6. Debitage Distribution by Size Grade Large.

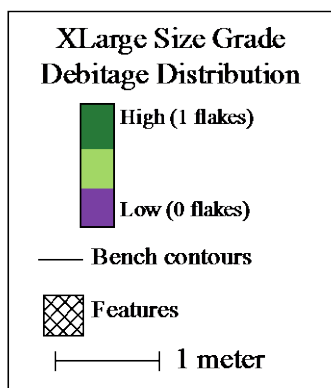
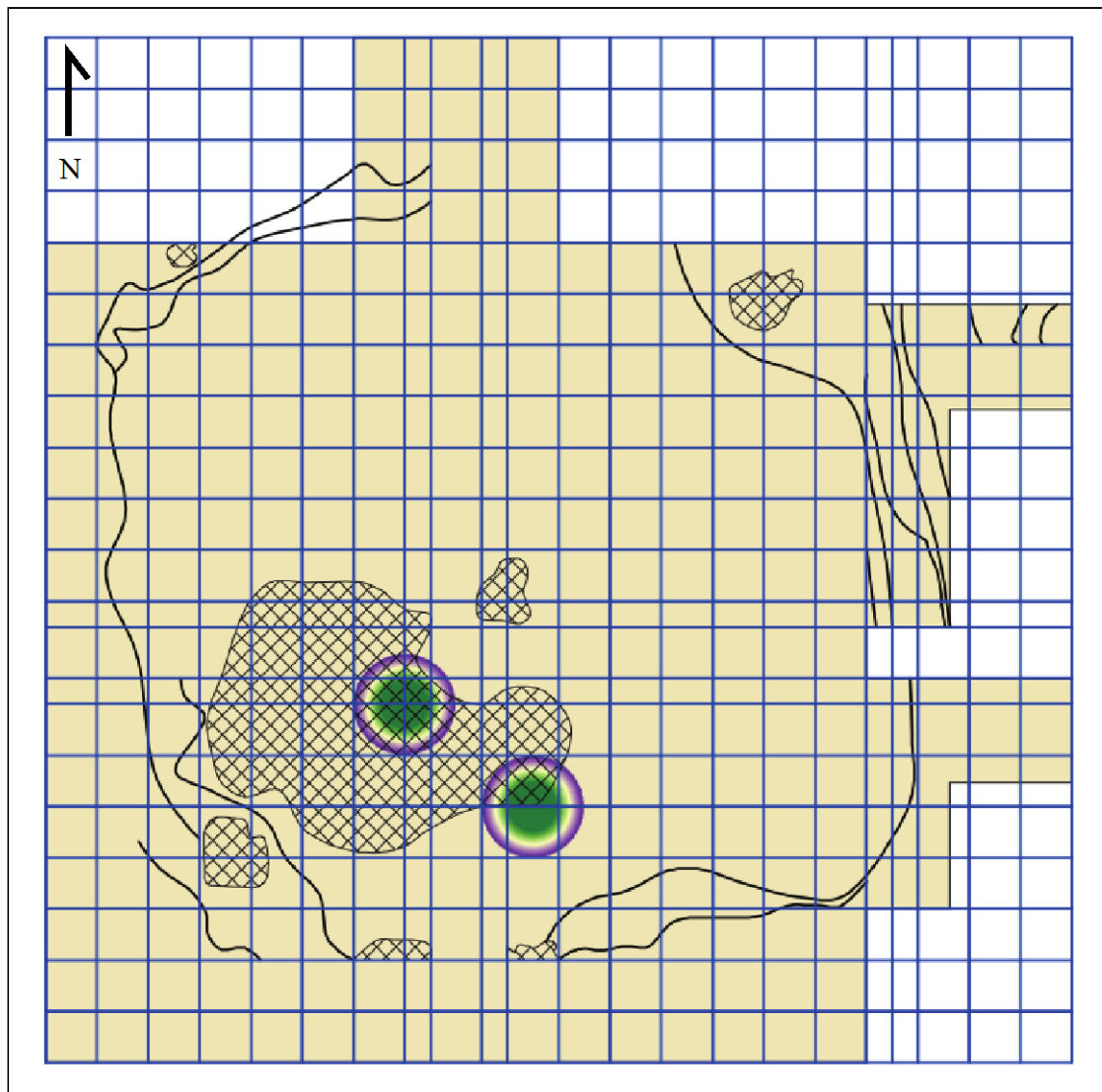


Figure B.7. Debitage Distribution by Size Grade Xlarge.

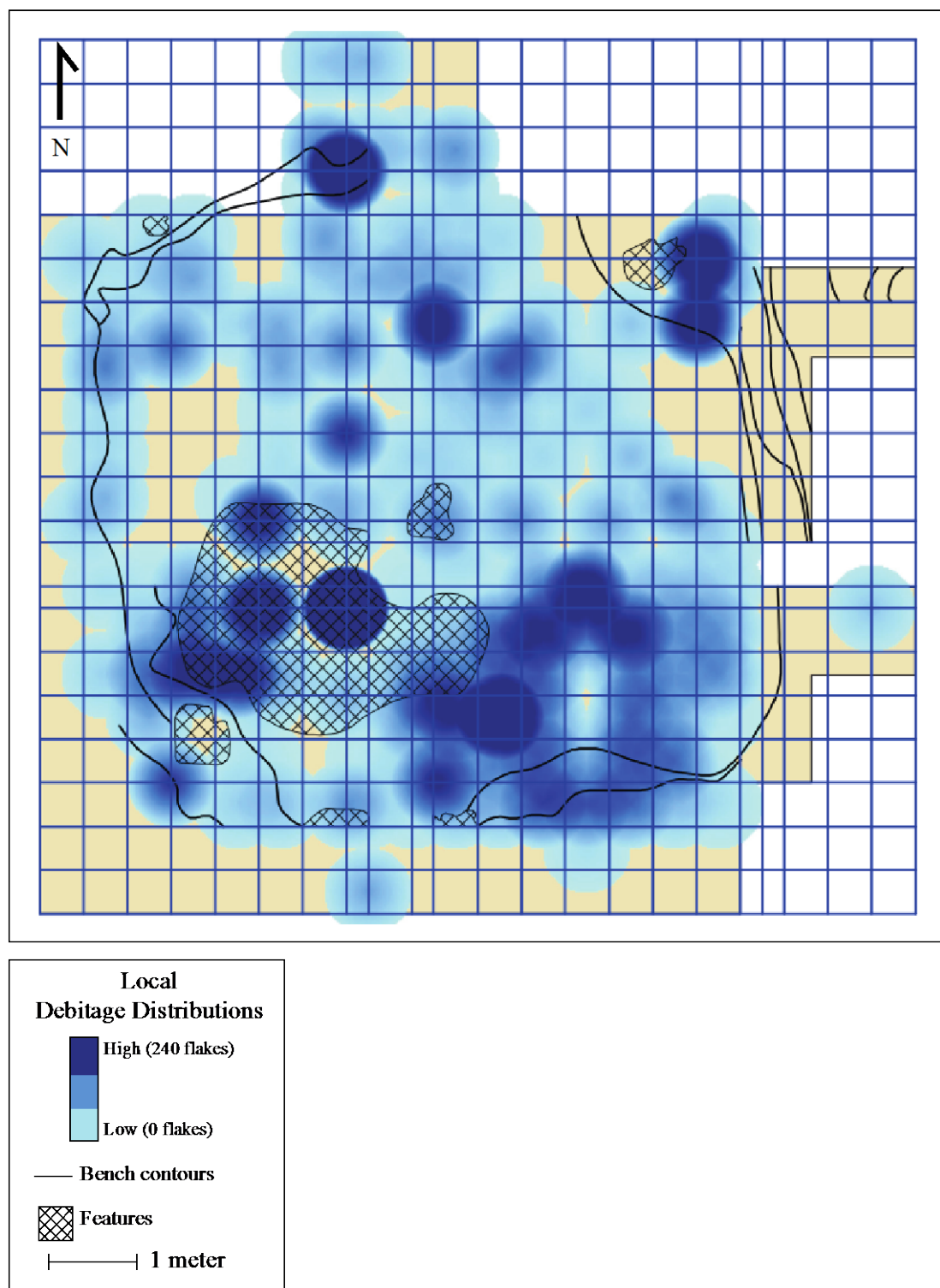


Figure B.8. Debitage Distribution by Locality – Local.

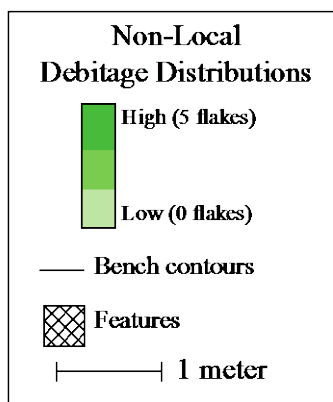
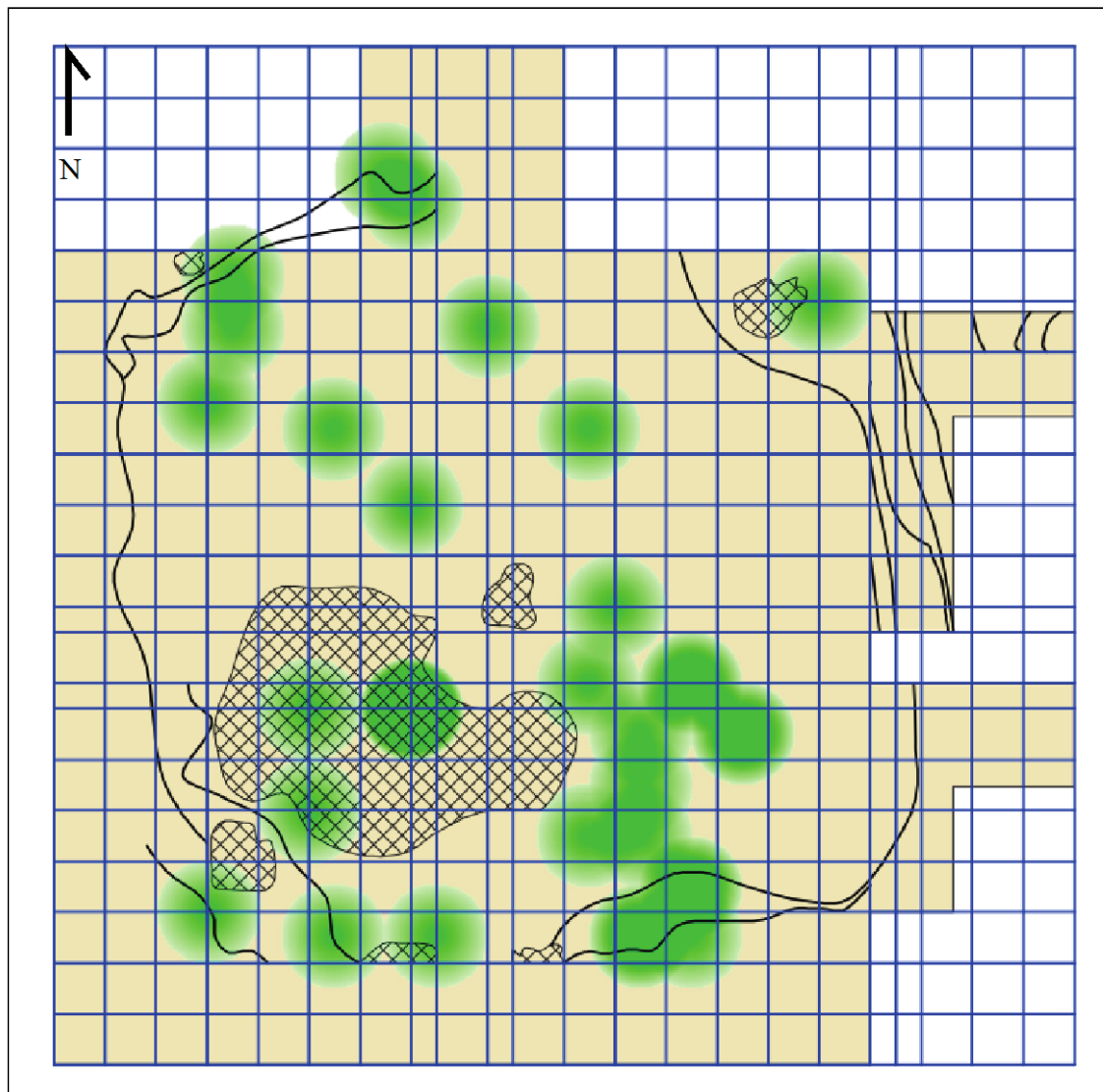


Figure B.9. Debitage Distribution by Locality – Non-local.

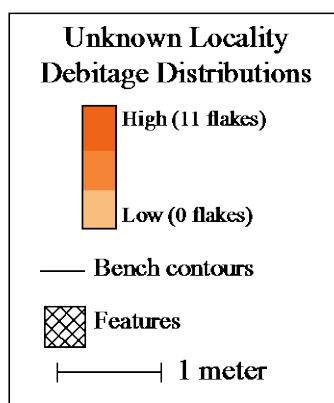
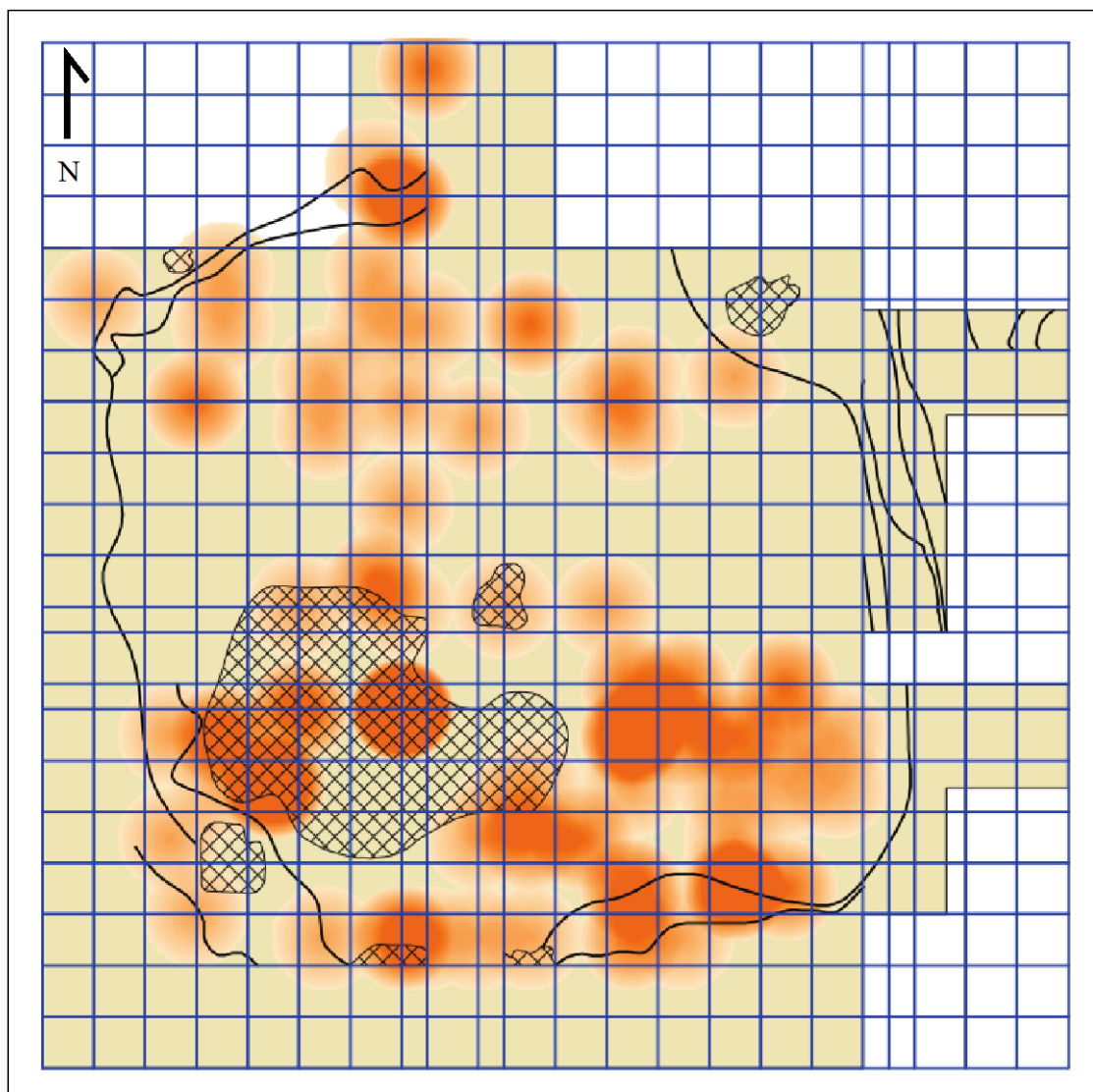


Figure B.10. Debitage Distribution by Locality – Unknown.

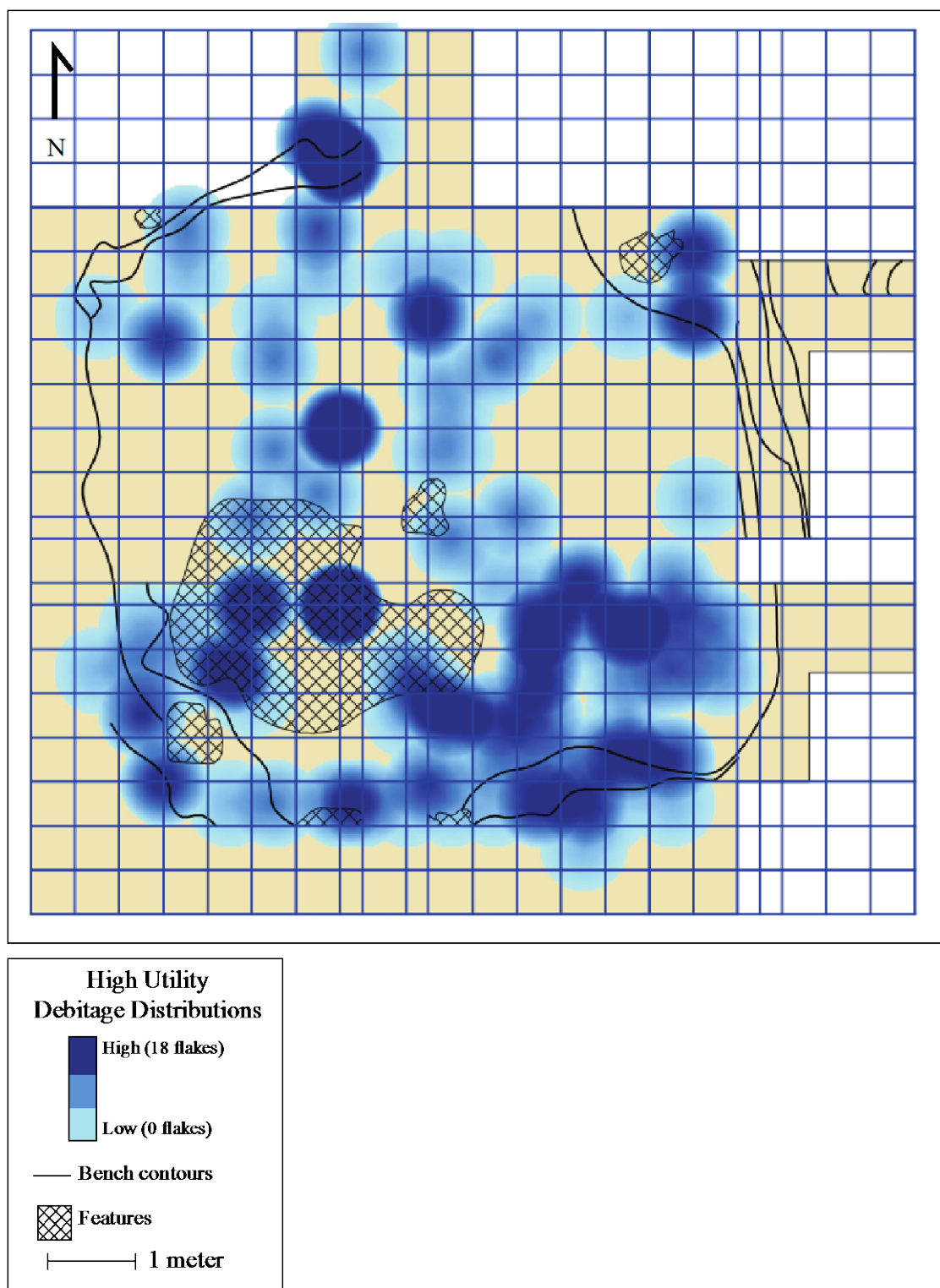


Figure B.11. Debitage Distribution by Utility – High.

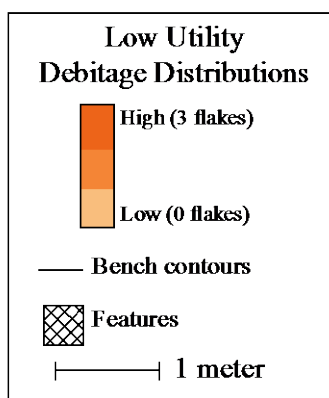
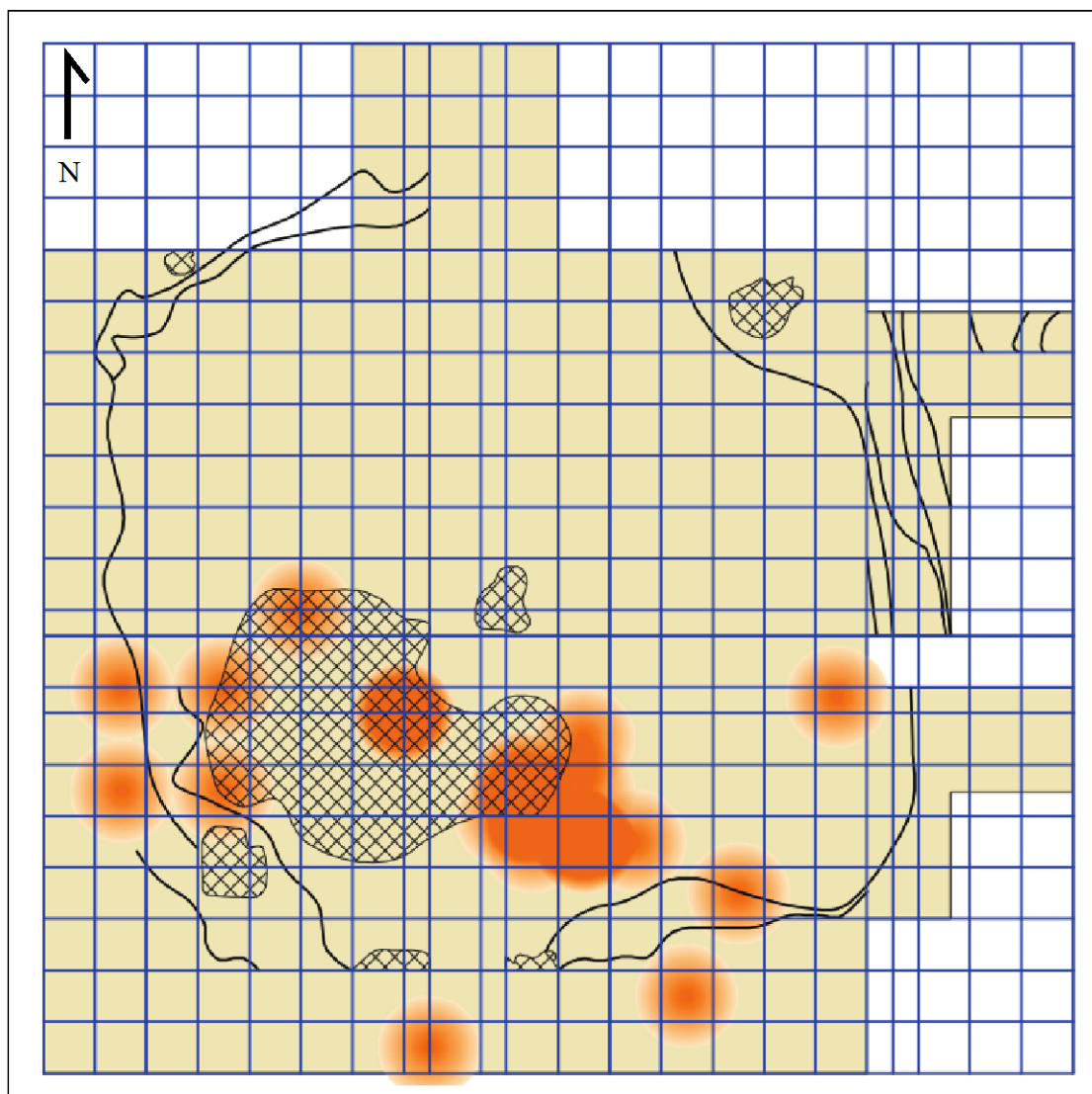


Figure B.13 Debitage Distribution by Utility – Low.

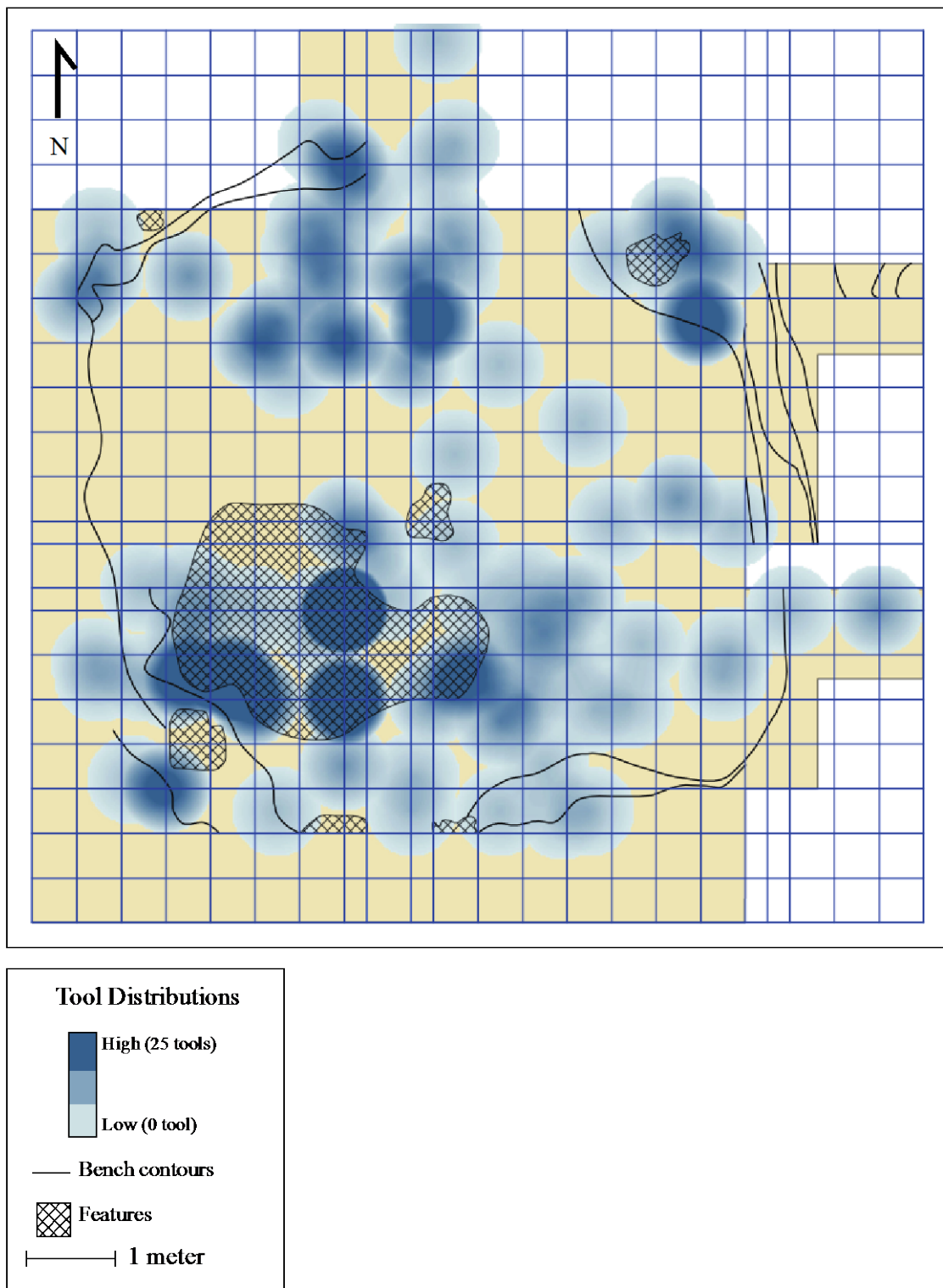


Figure B.14. Tool and Core Distribution.

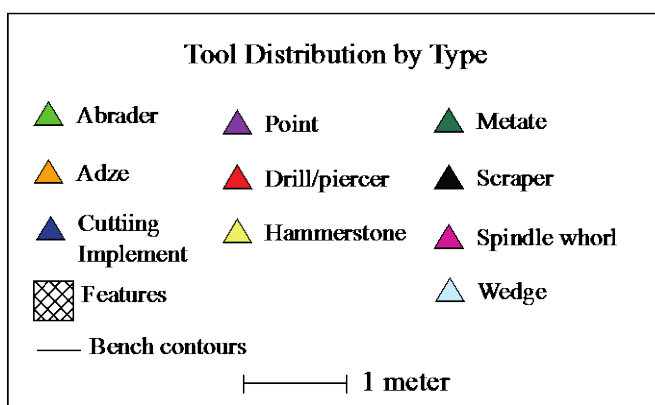
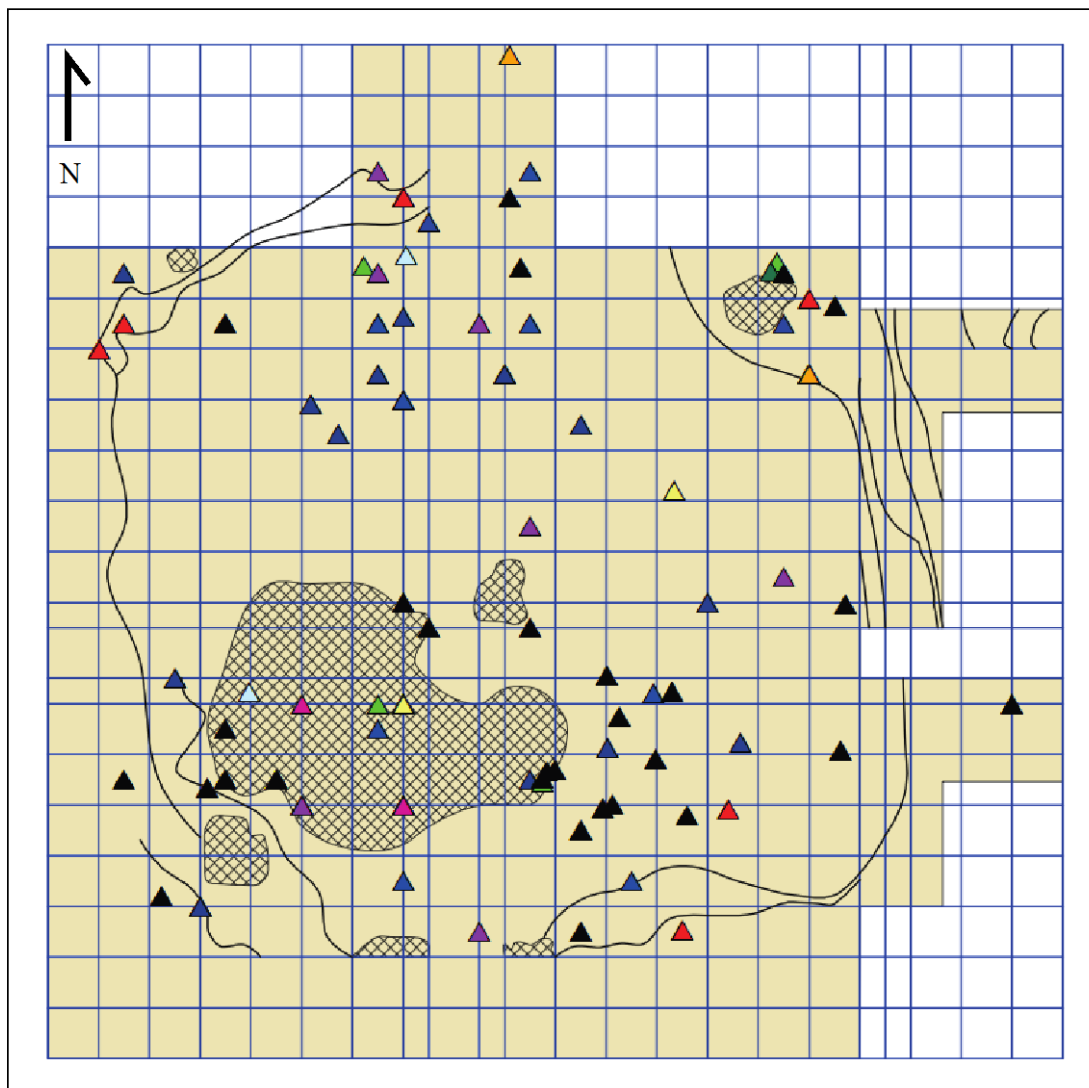


Figure B.15 Tool Distribution by Type.

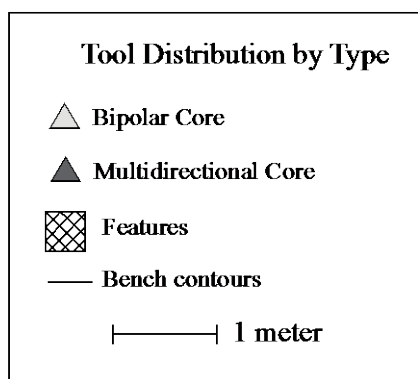
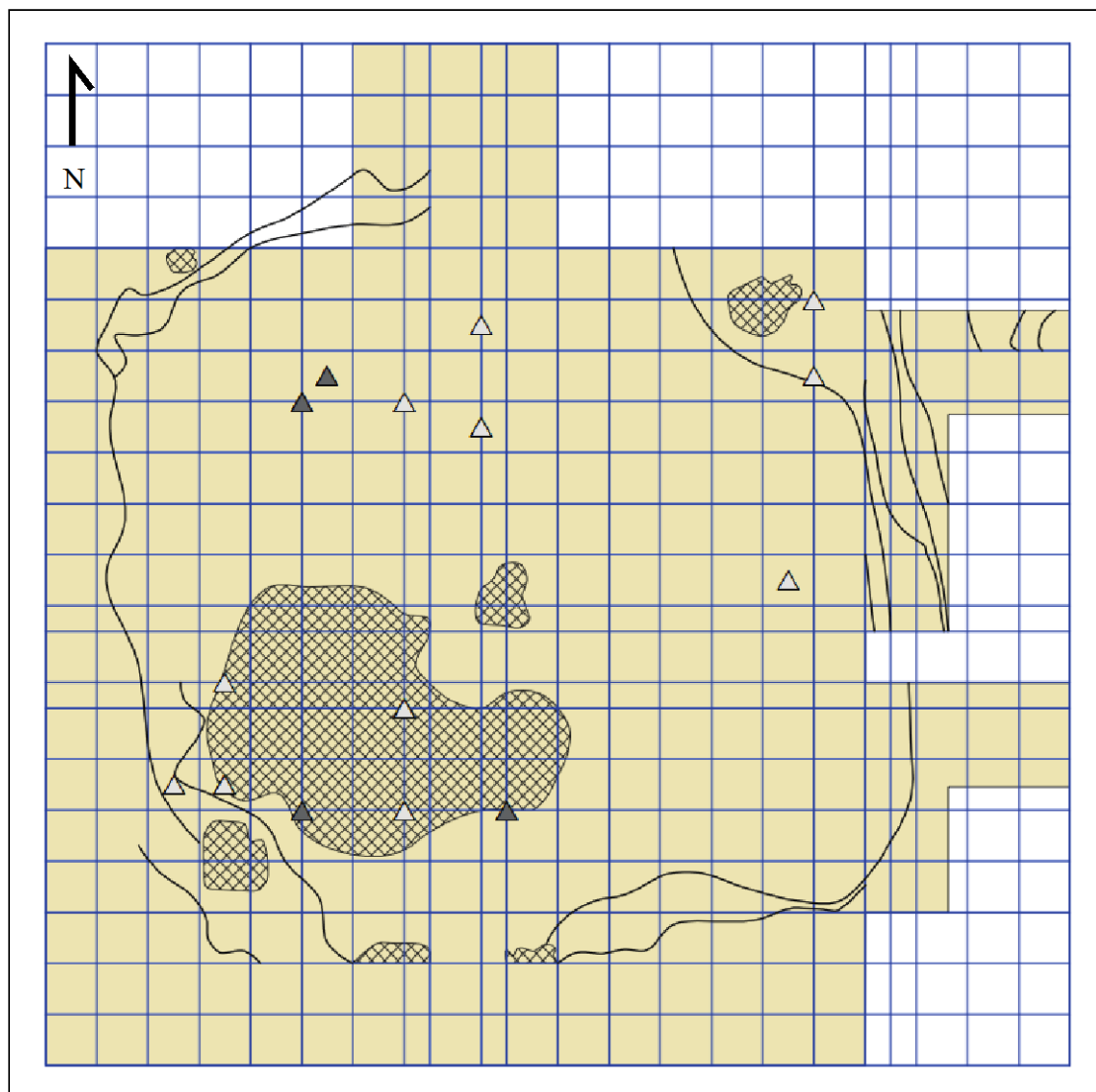


Figure B.16. Core Distribution.

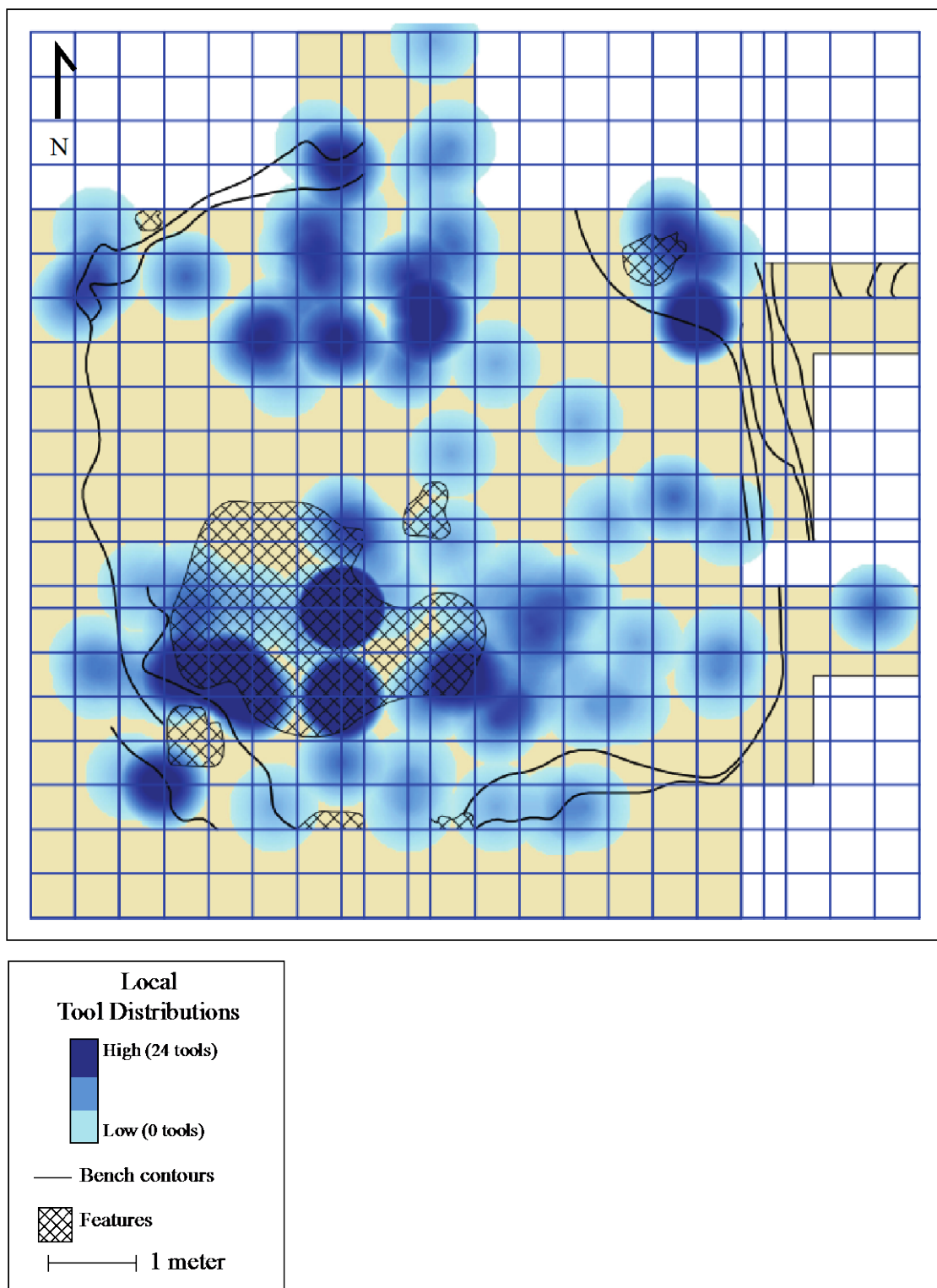


Figure B.17. Tool Distribution by Locality – Local.

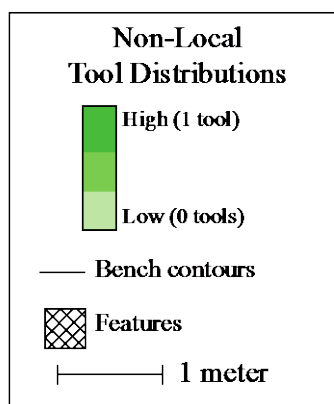
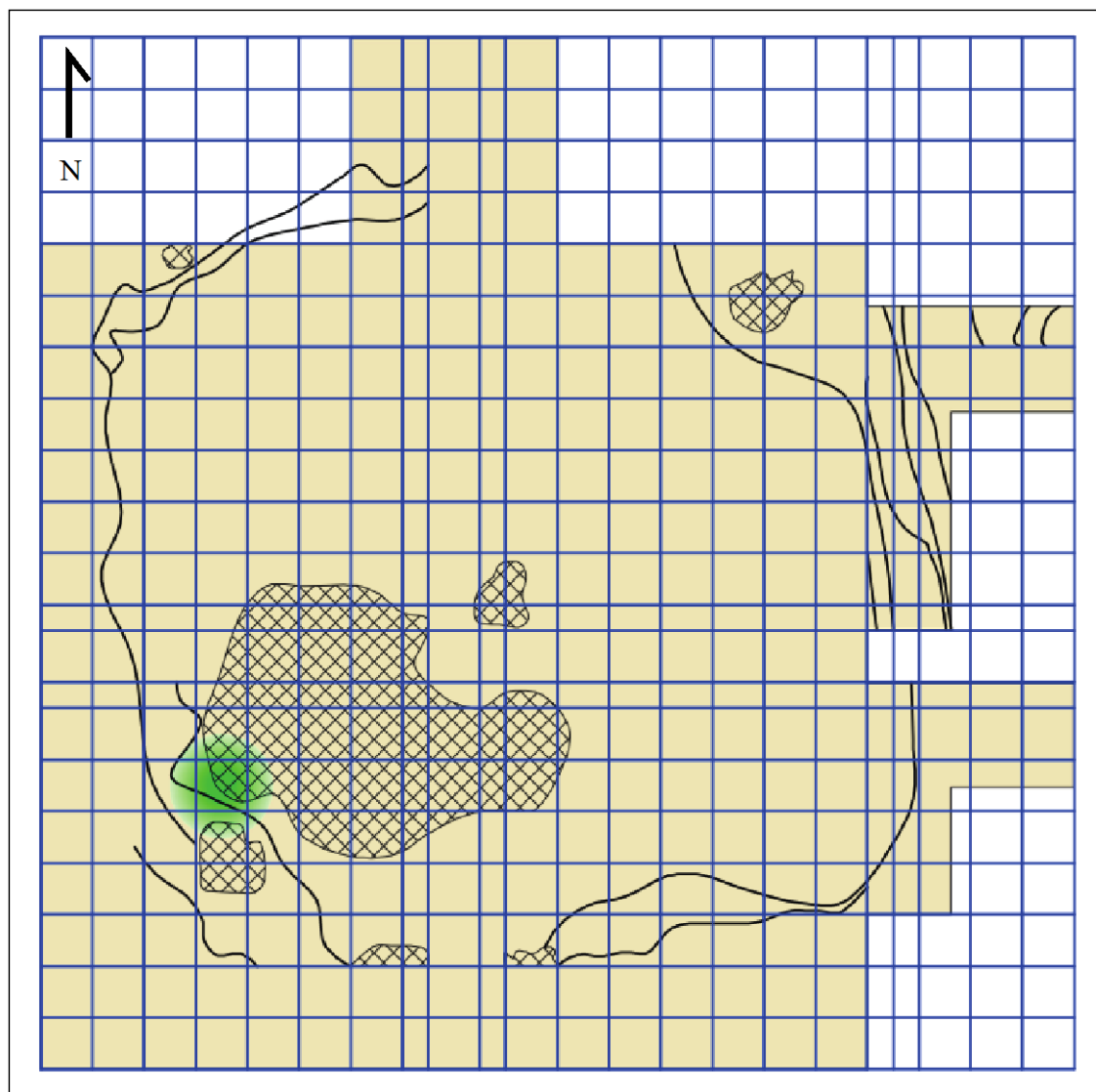


Figure B.18. Tool Distribution by Locality – Non-local.

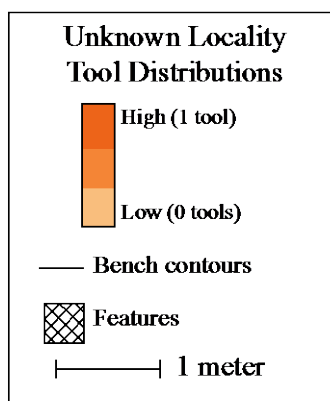
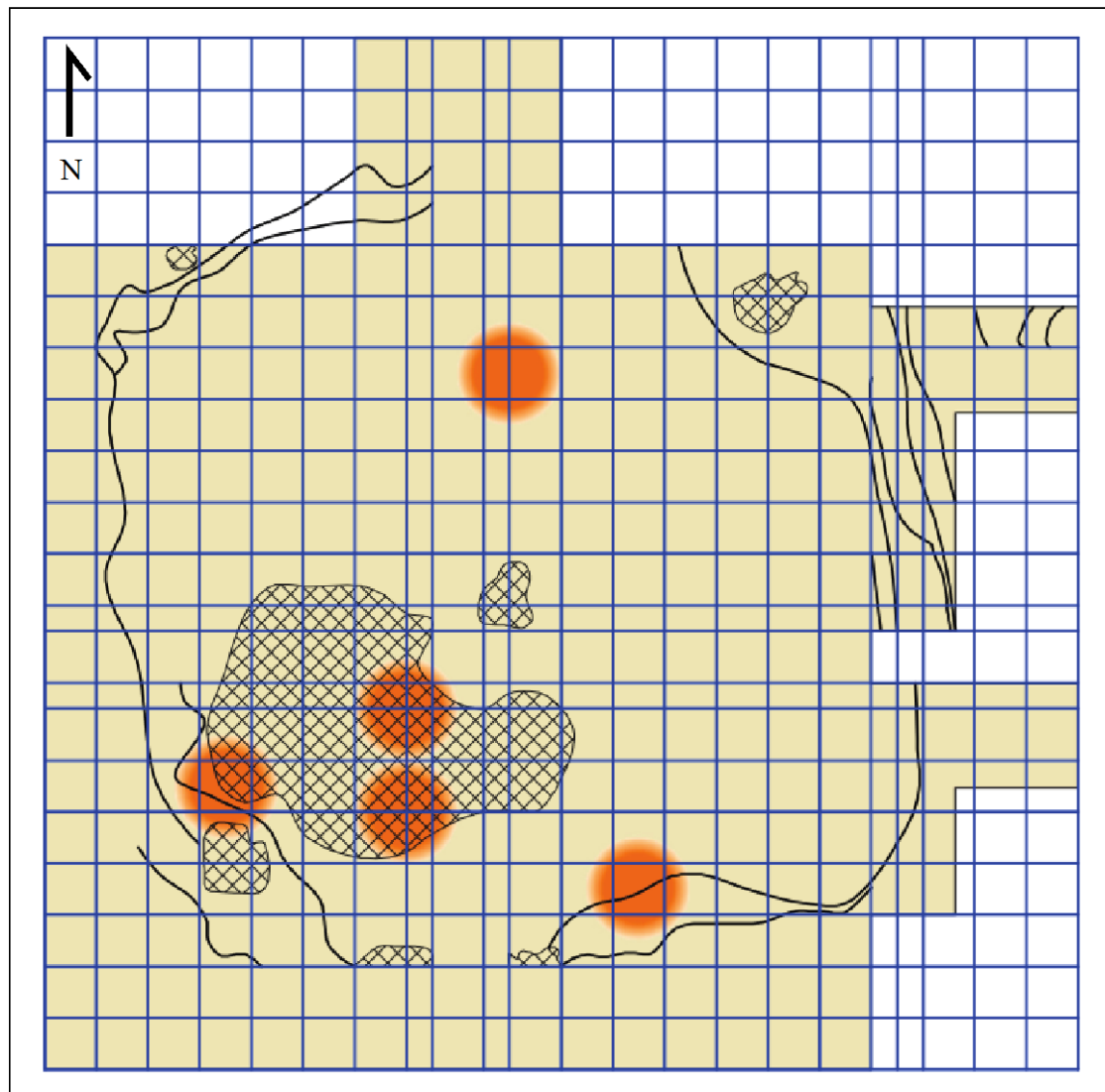


Figure B.19. Tool Distribution by Locality – Unknown.

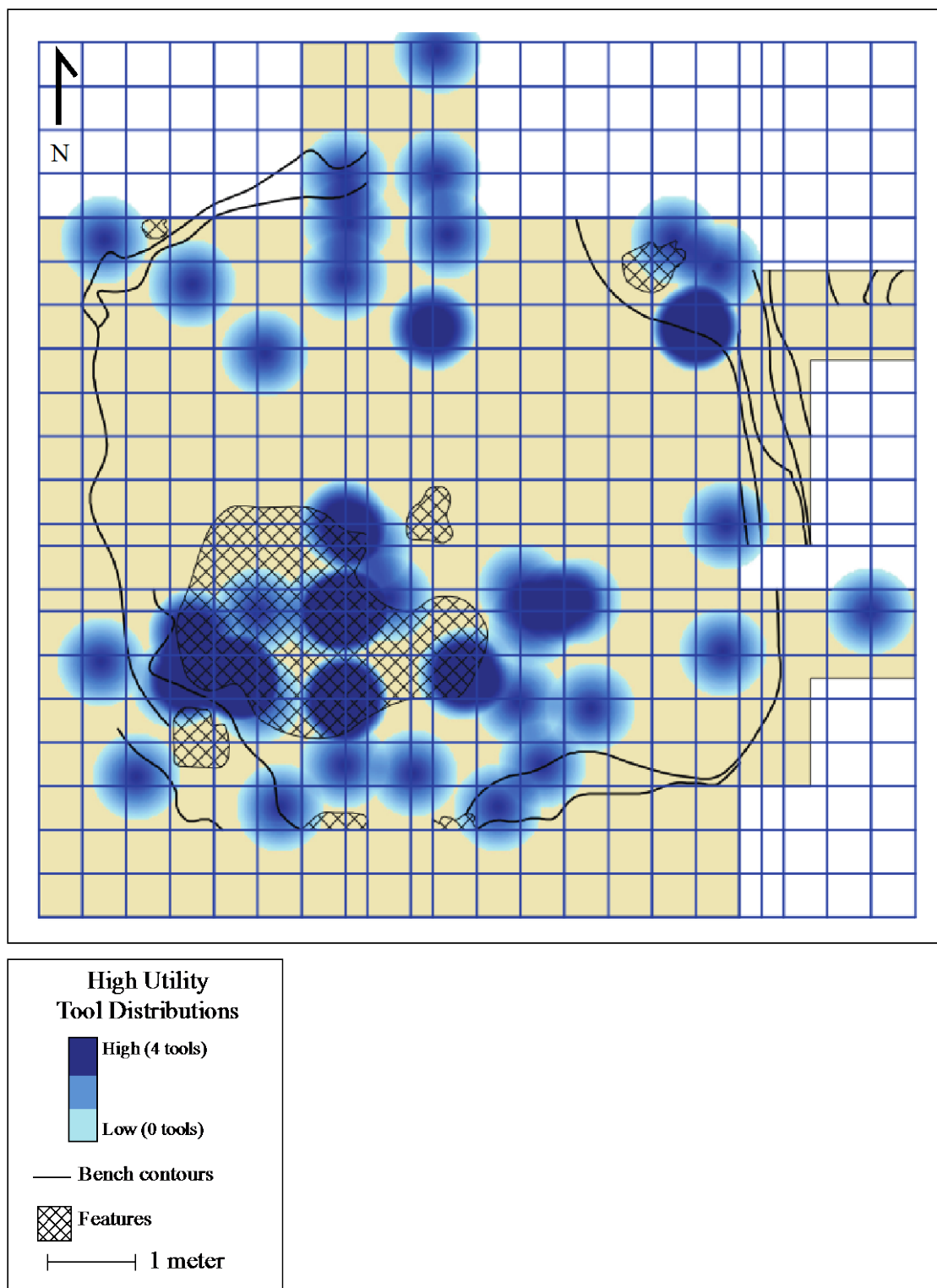


Figure B.20. Tool Distribution by Utility – High.

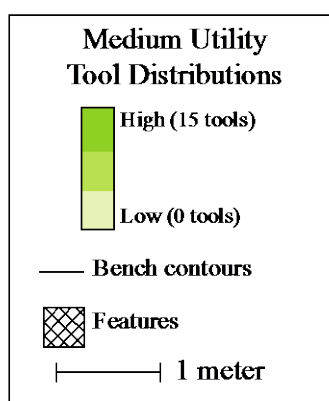
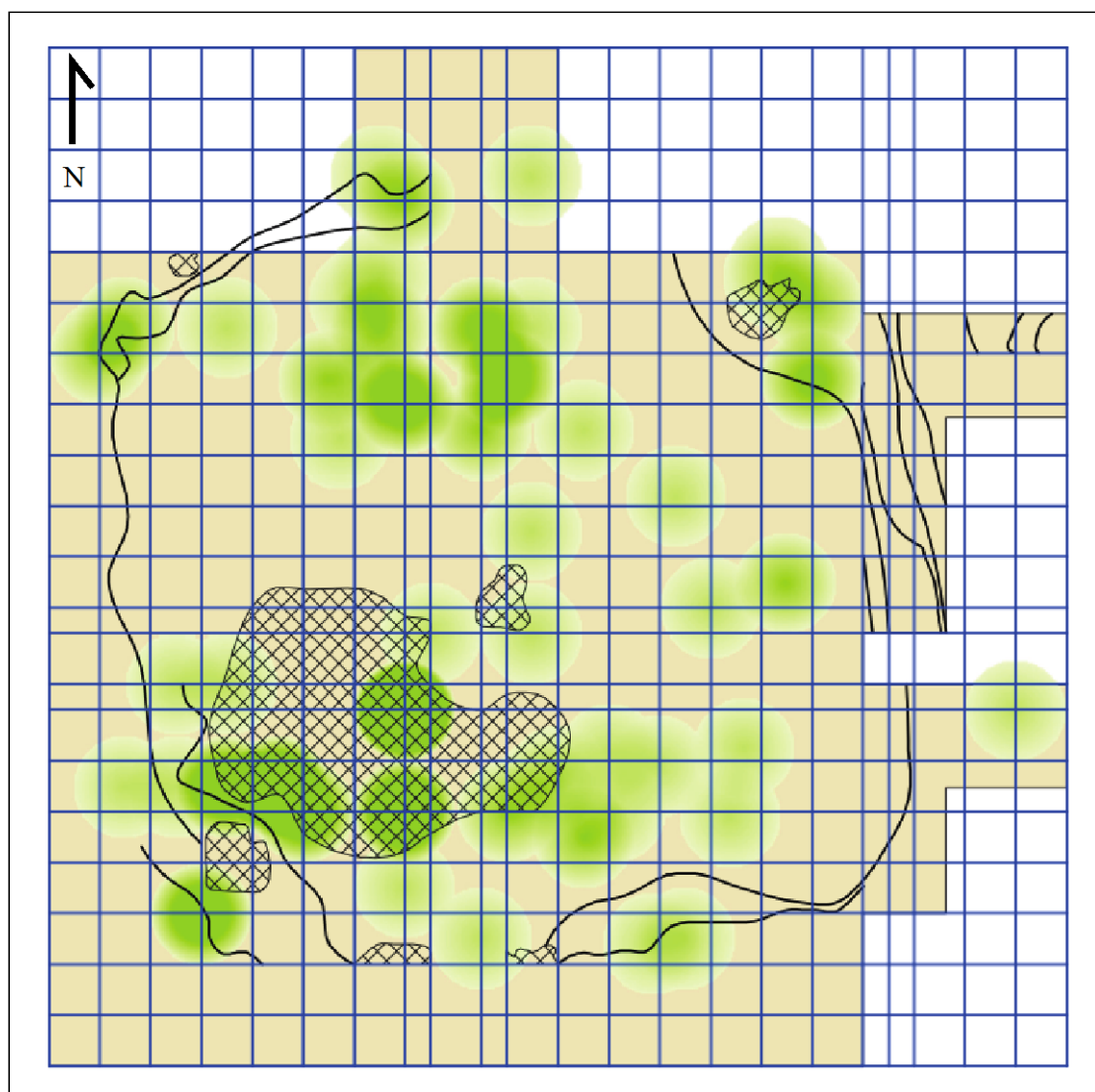


Figure B.21. Tool Distribution by Utility – Medium.

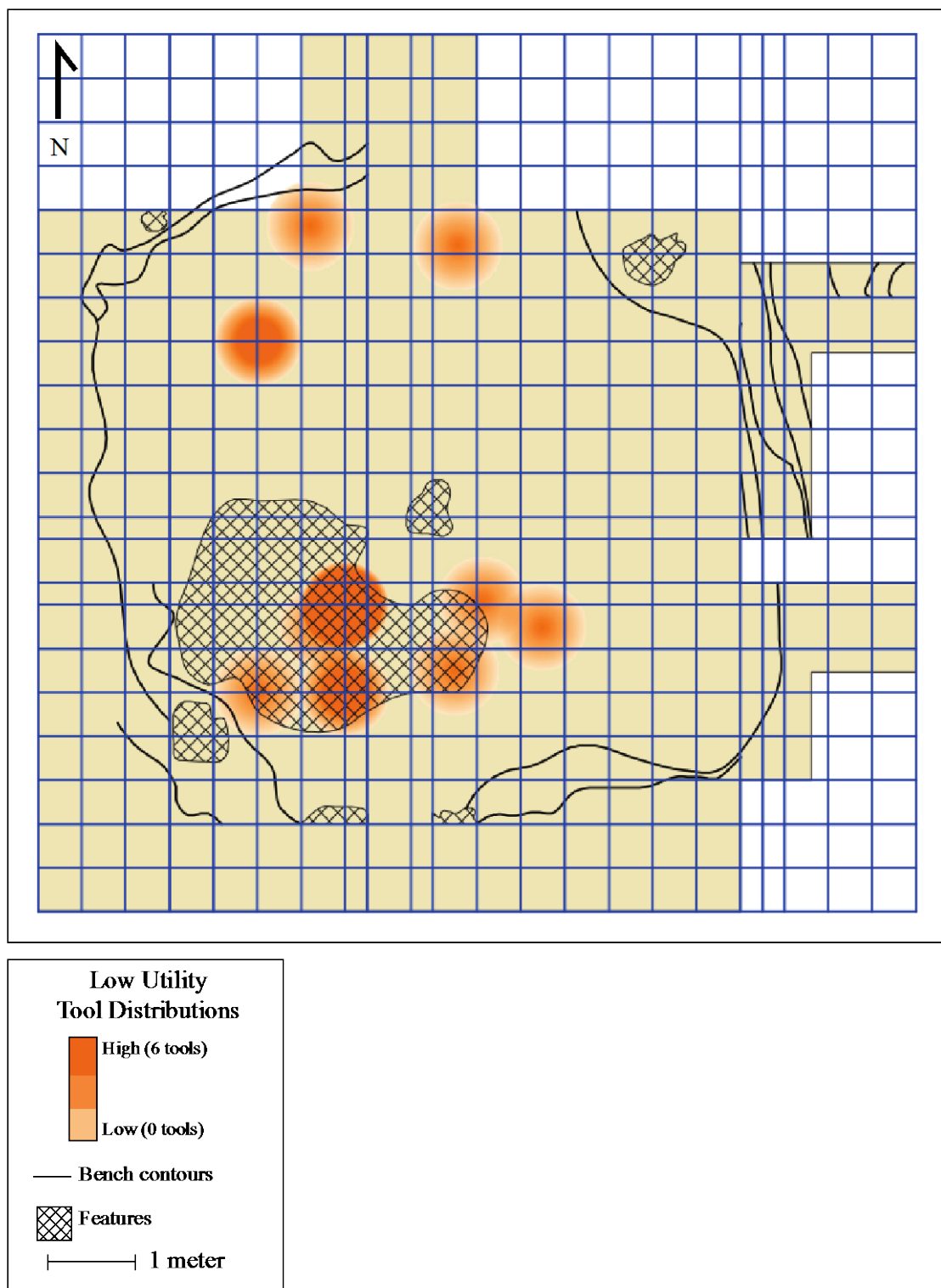


Figure B.22. Tool Distribution by Utility – Low.

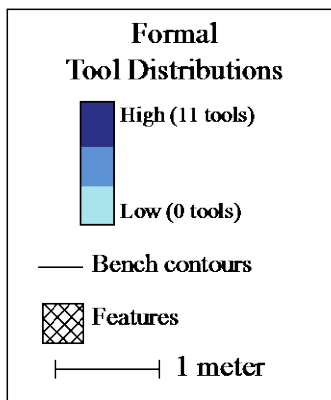
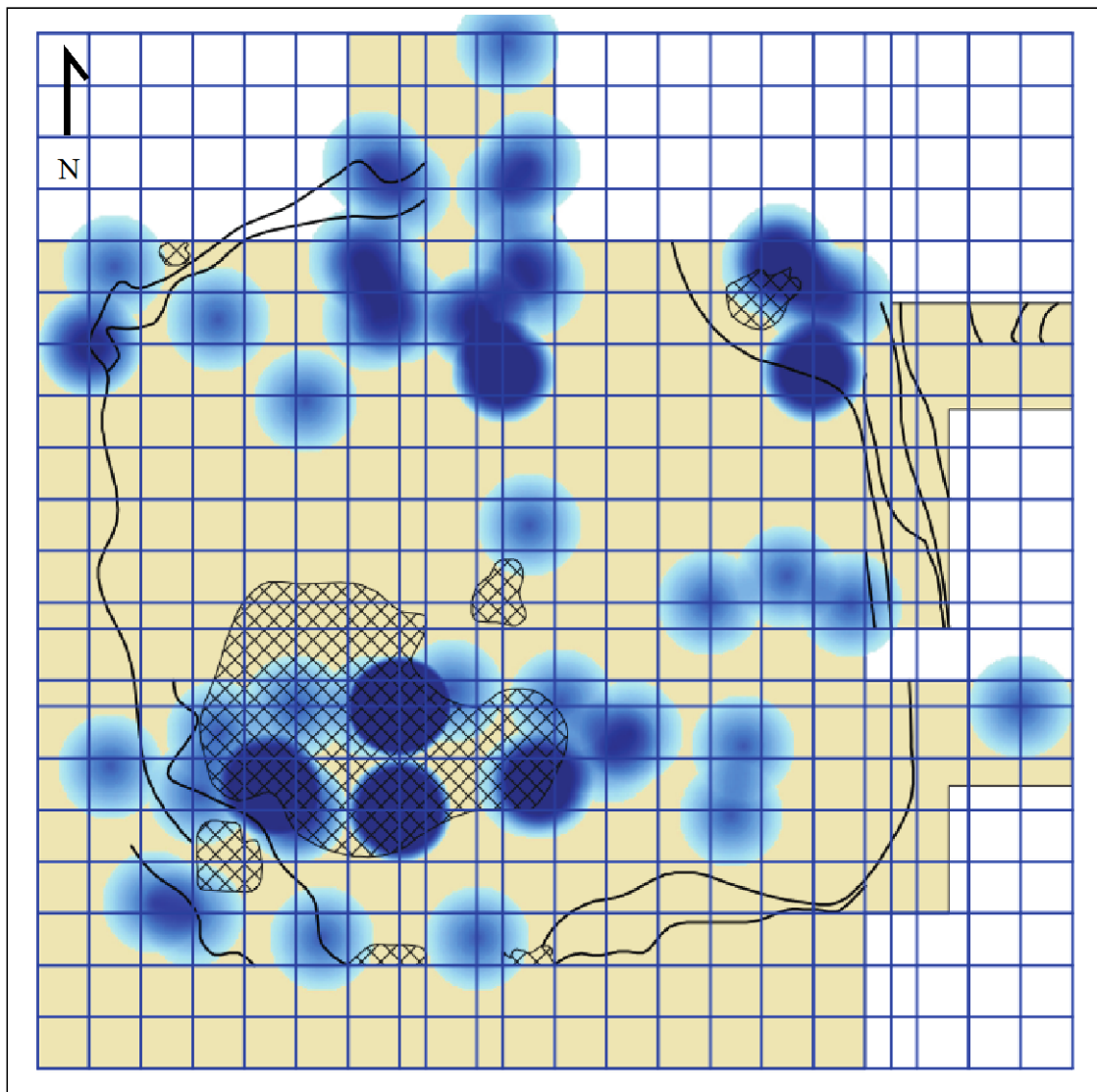


Figure B.23. Tool Distribution by Curation – Formal.

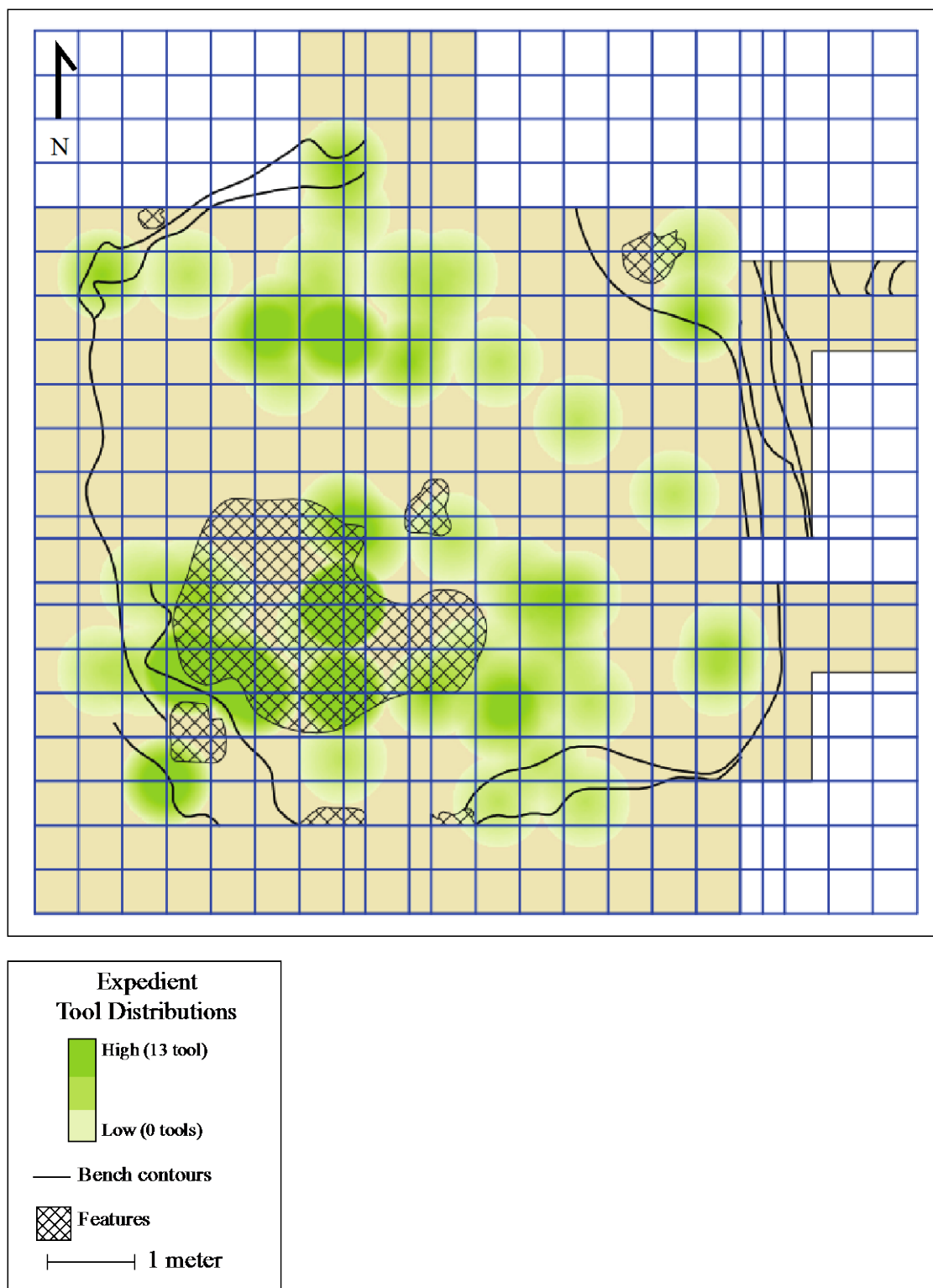


Figure B.24. Tool Distribution by Curation – Expedient.

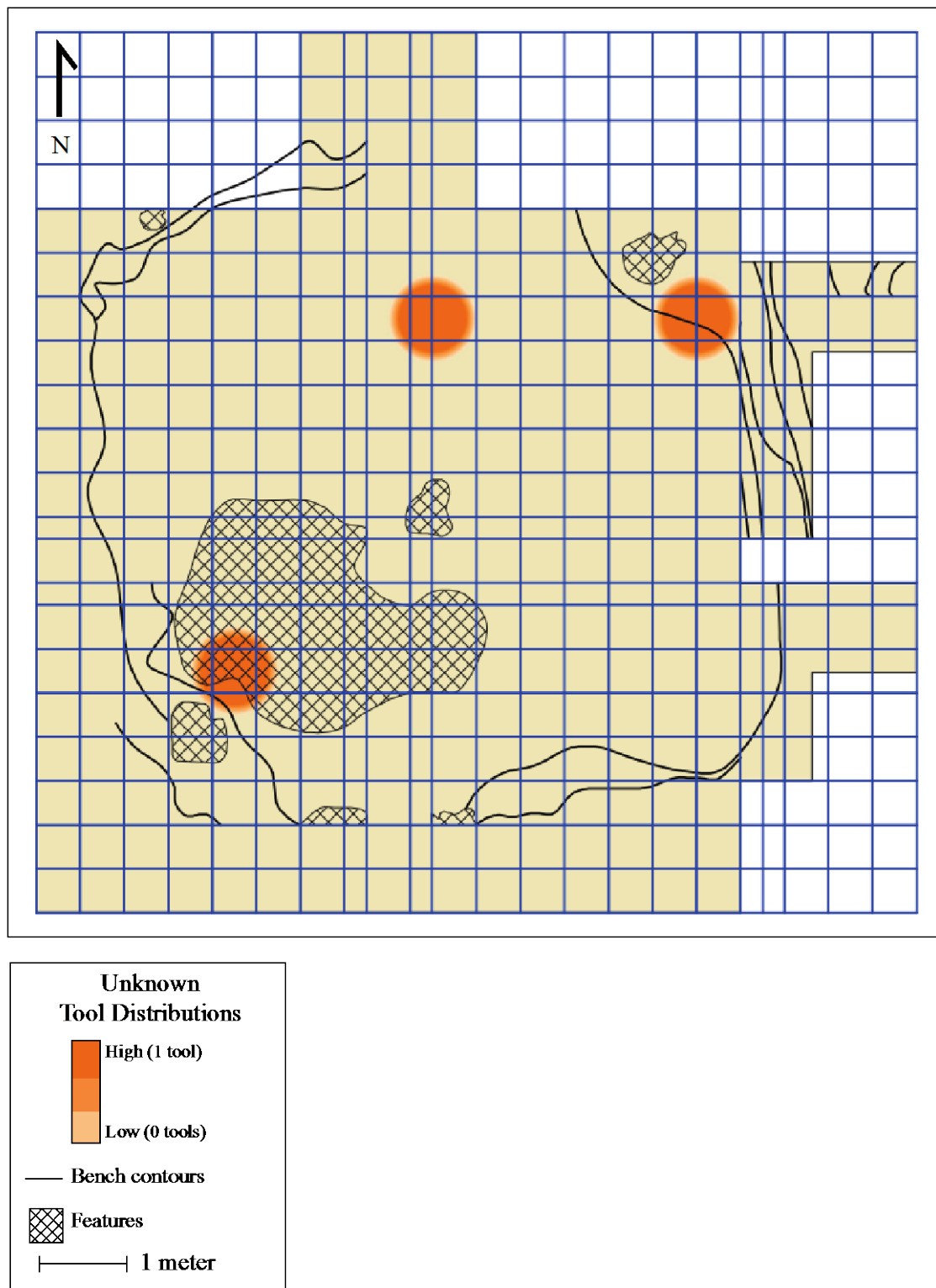


Figure B.25. Tool Distribution by Curation – Unknown.

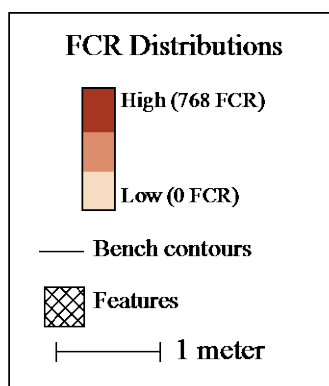
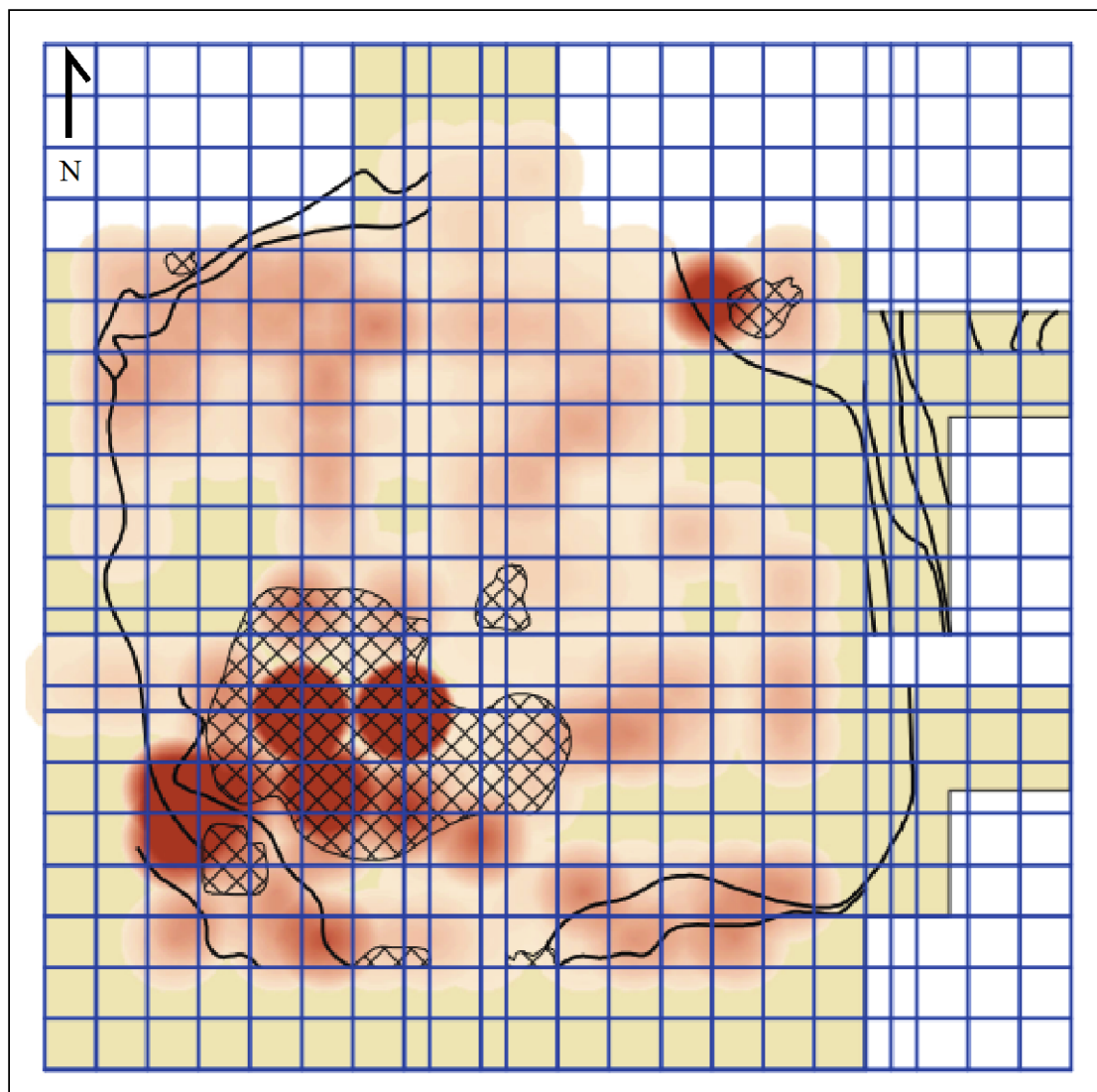


Figure B.26. Fire-Cracked Rock.

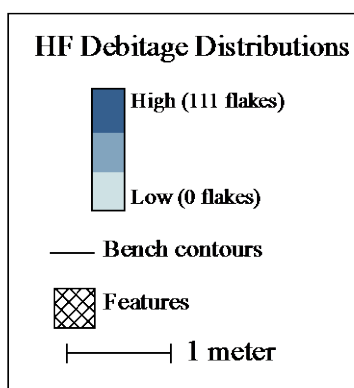
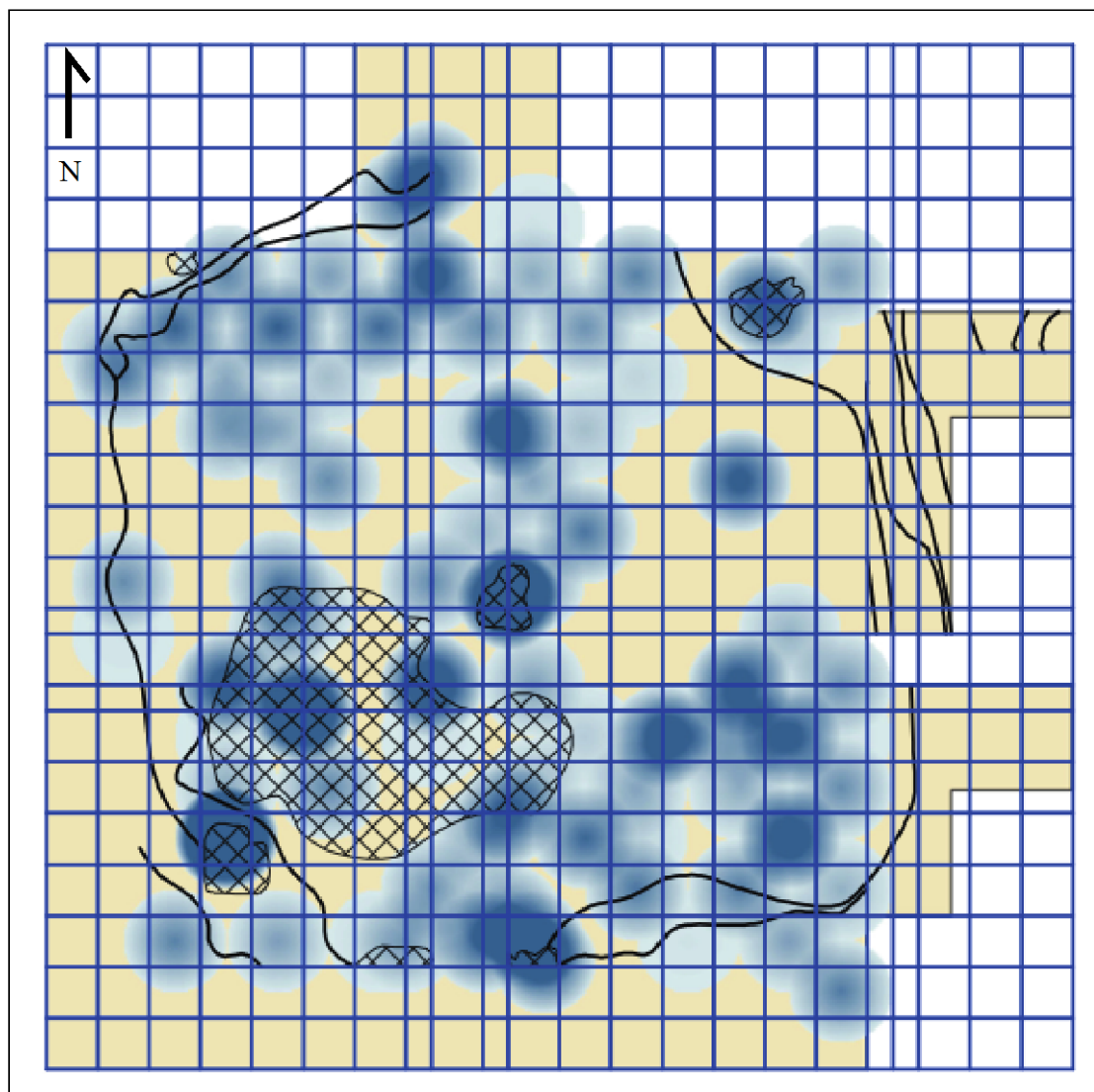


Figure B.27. Heavy Fraction Debitage Distribution.

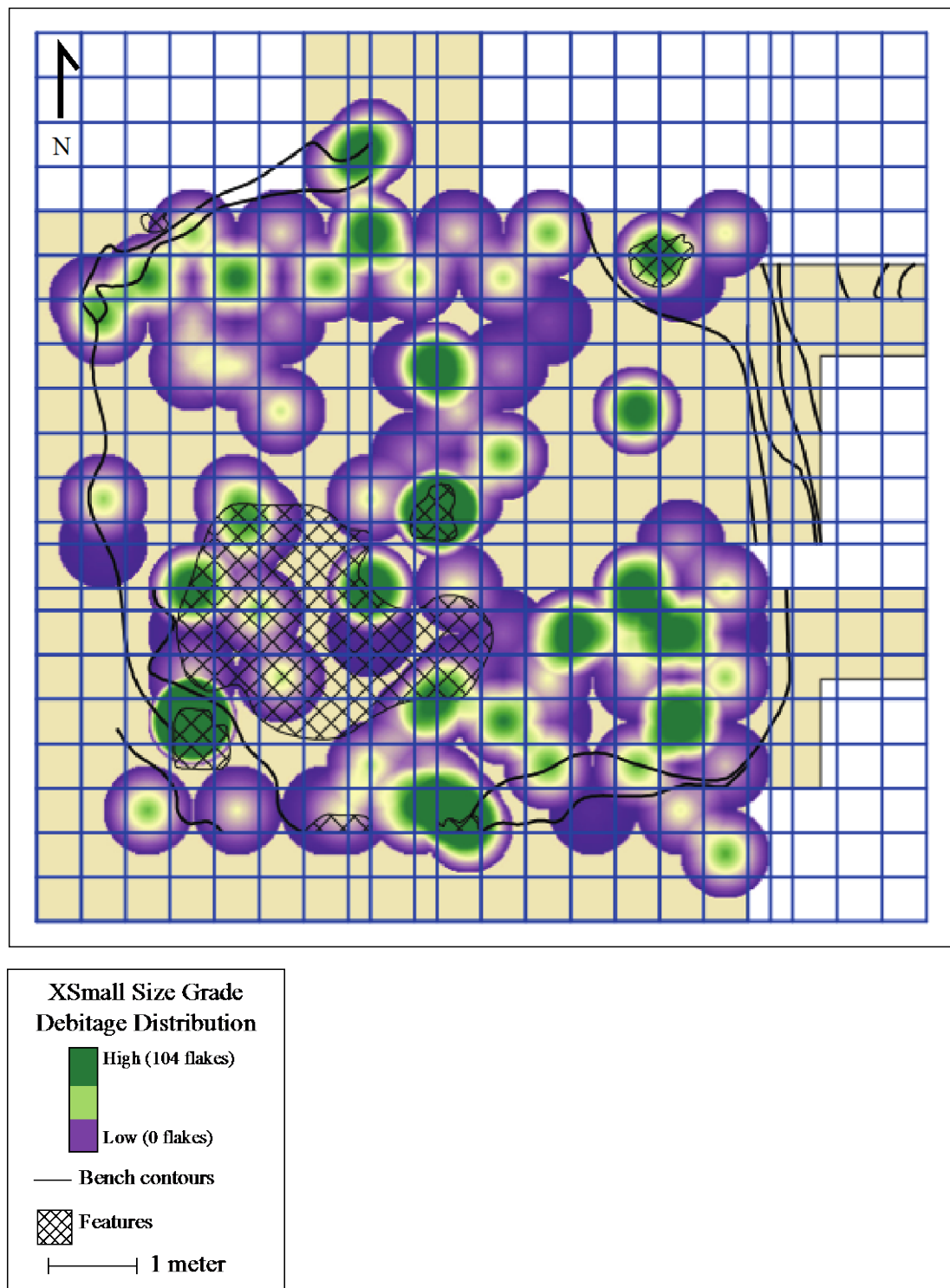


Figure B.28. Heavy Fraction Debitage Distribution by Size Grade Xsmall.

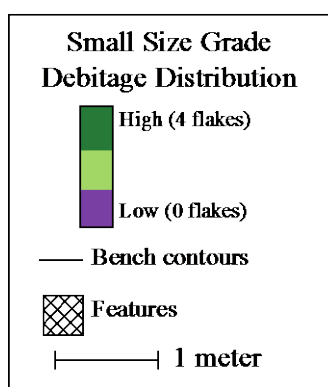
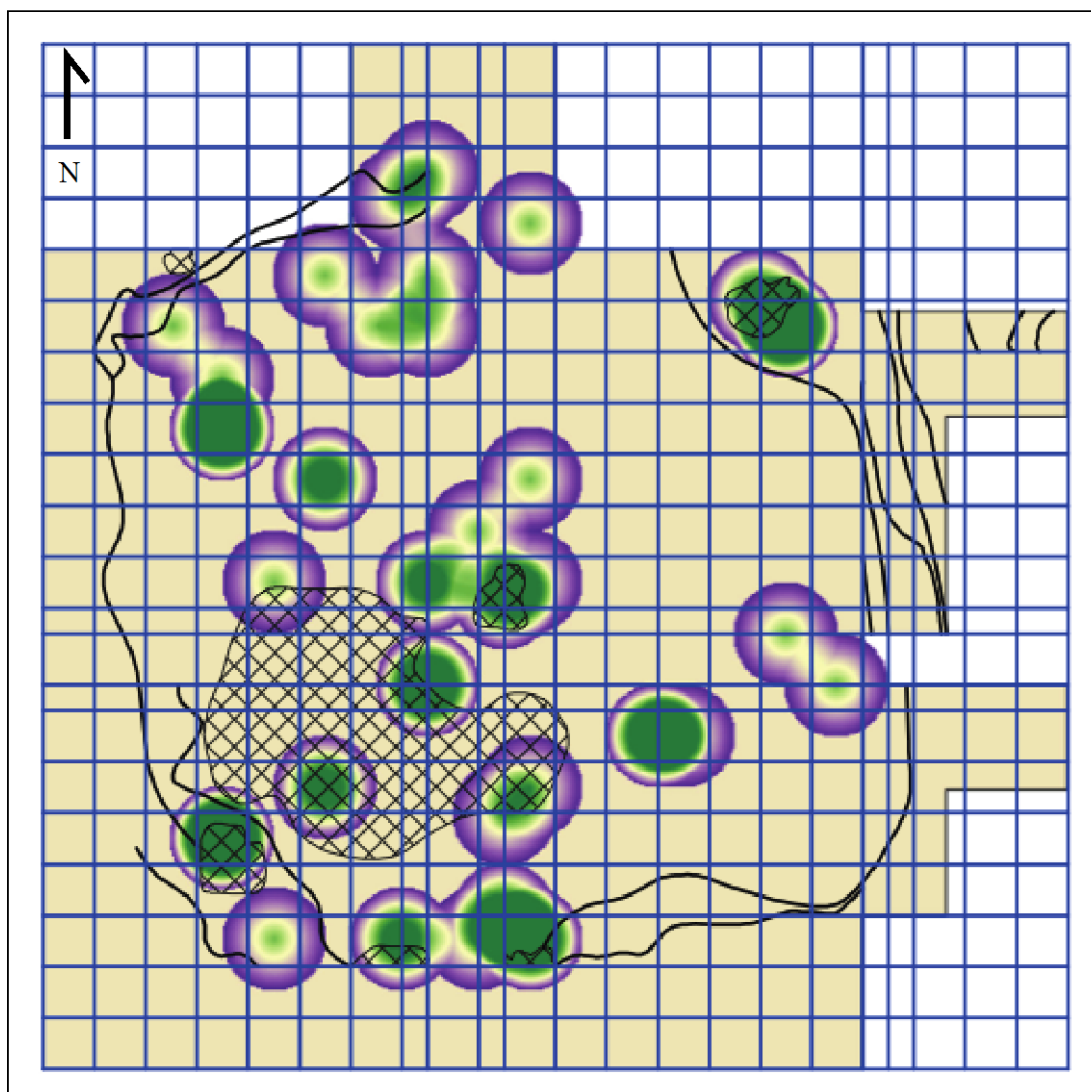


Figure B.29. Heavy Fraction Debitage Distribution by Size Grade Small.

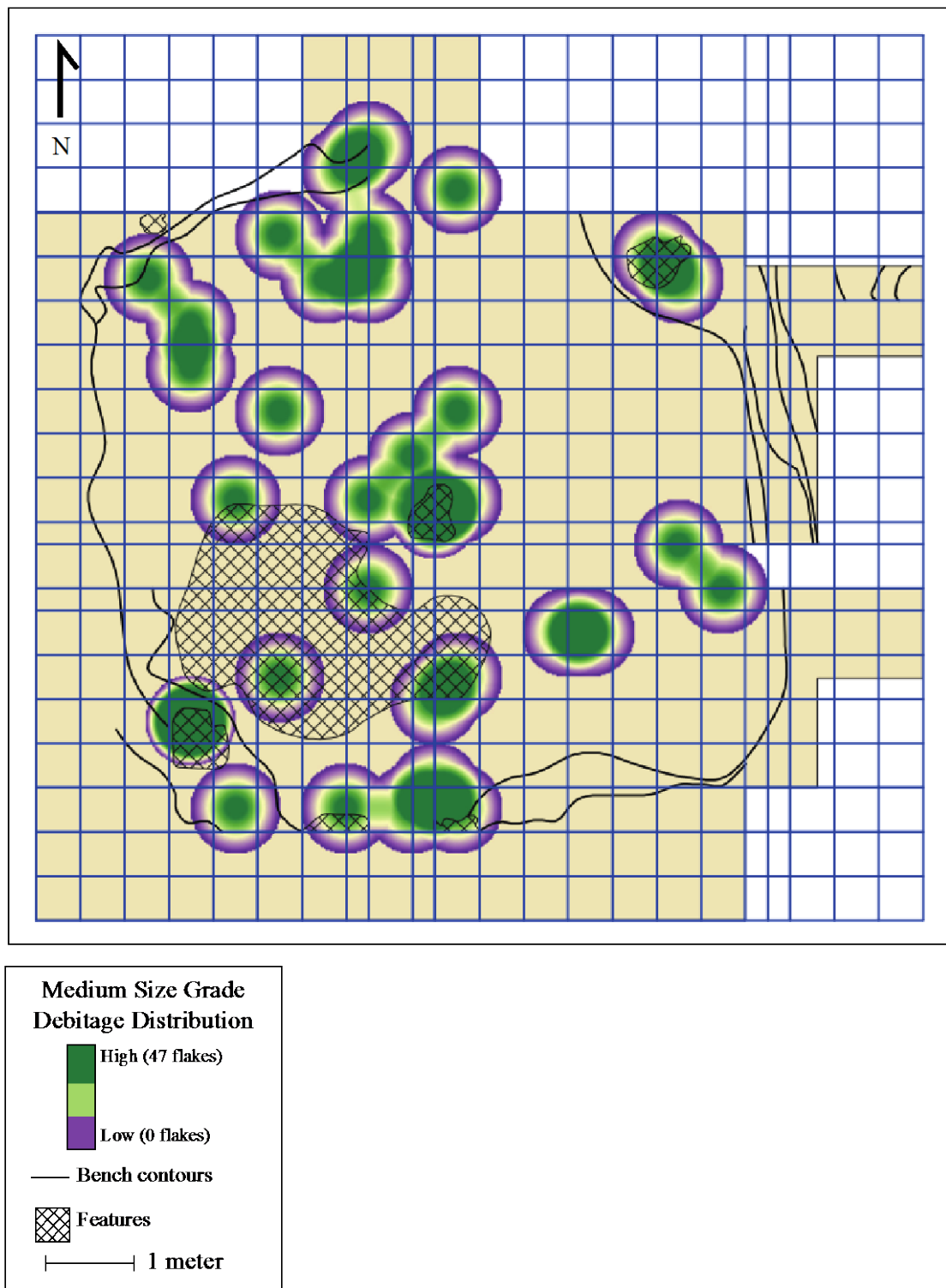


Figure B.30. Heavy Fraction Debitage Distribution by Size Grade Medium.

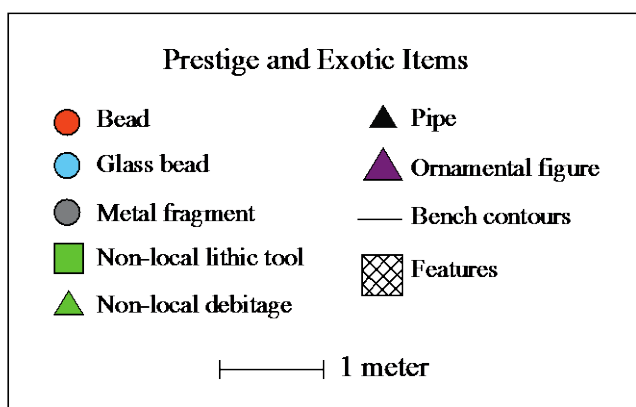
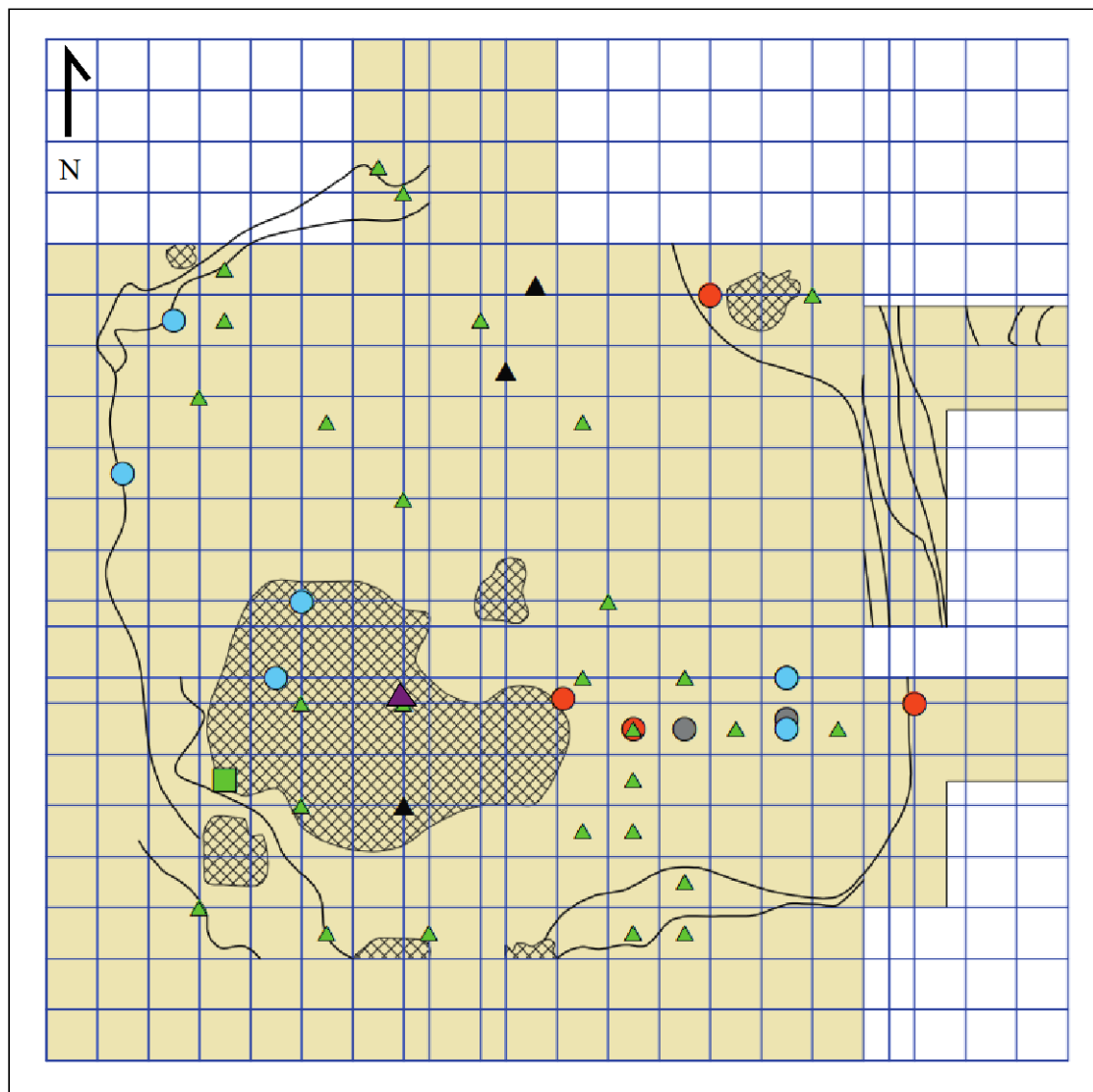


Figure B.31. Prestige and Exotic Item Distribution.

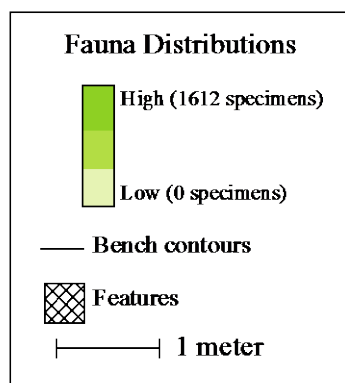
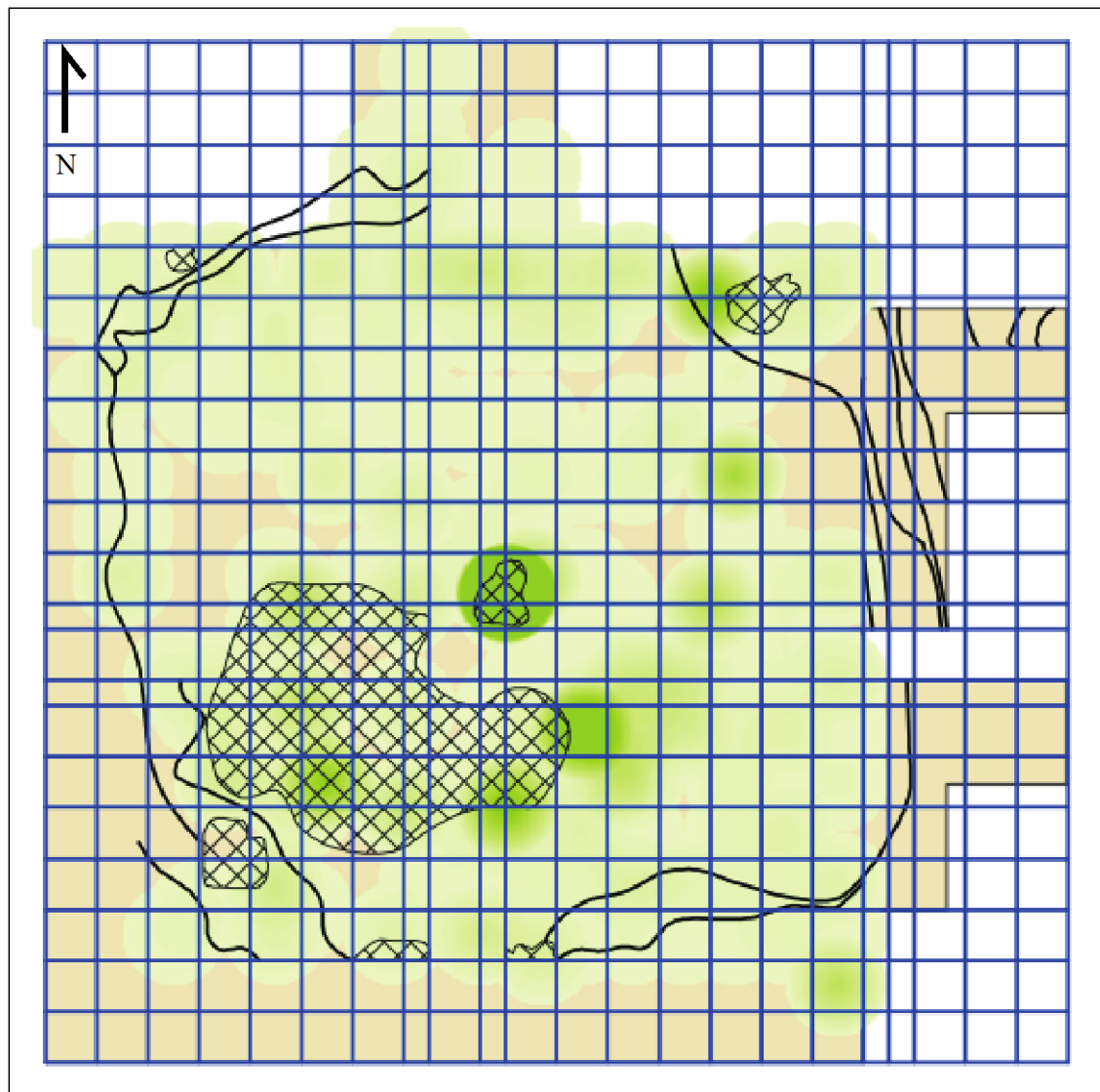


Figure B.32. Fauna Distribution.

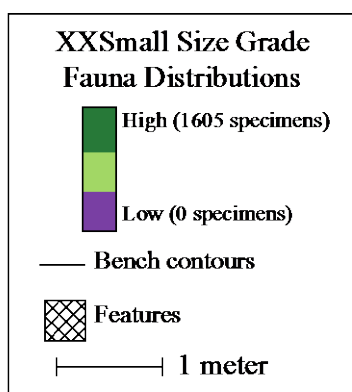
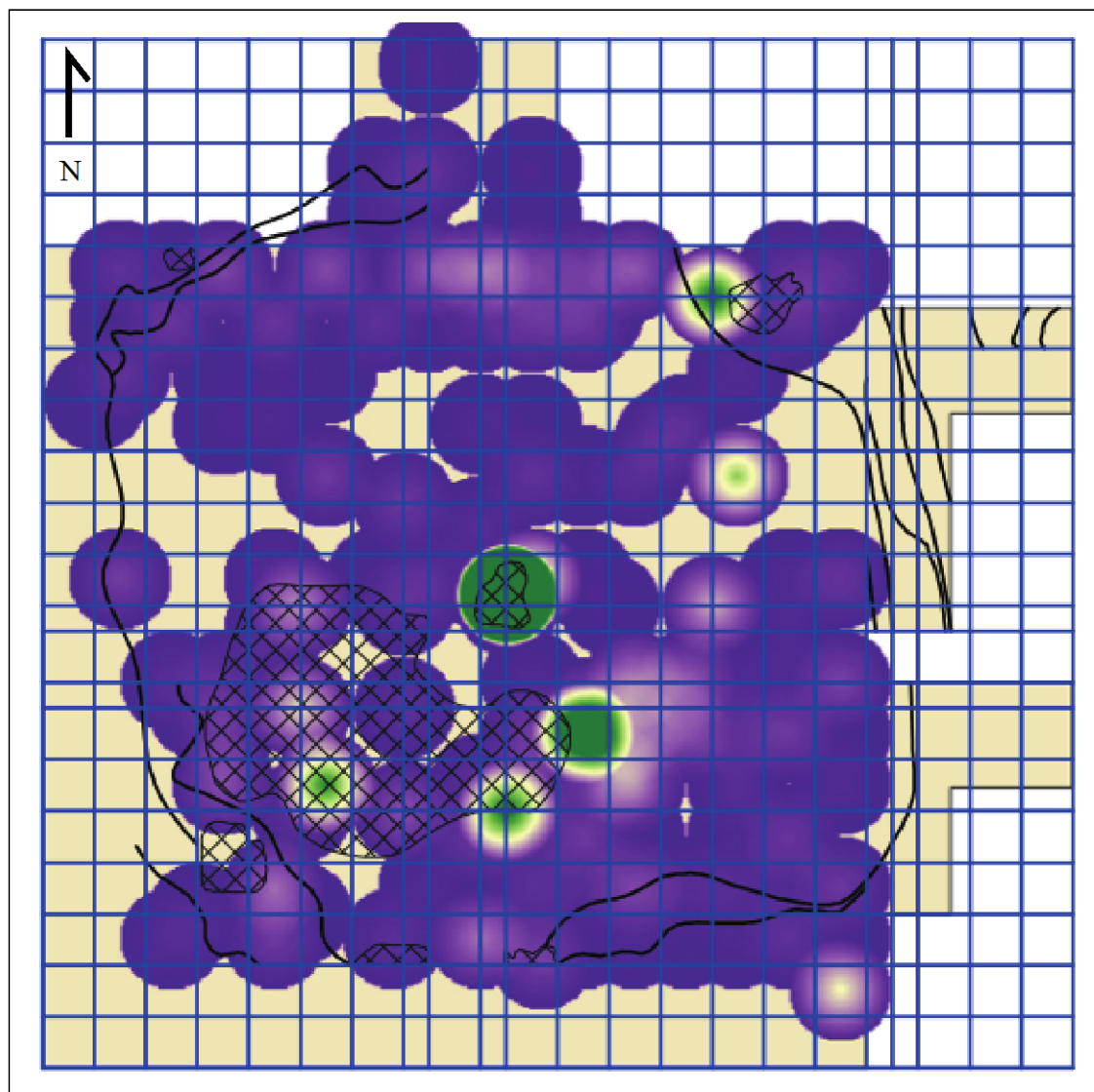


Figure B.33. Fauna Distribution by Size Grade Xxsmall.

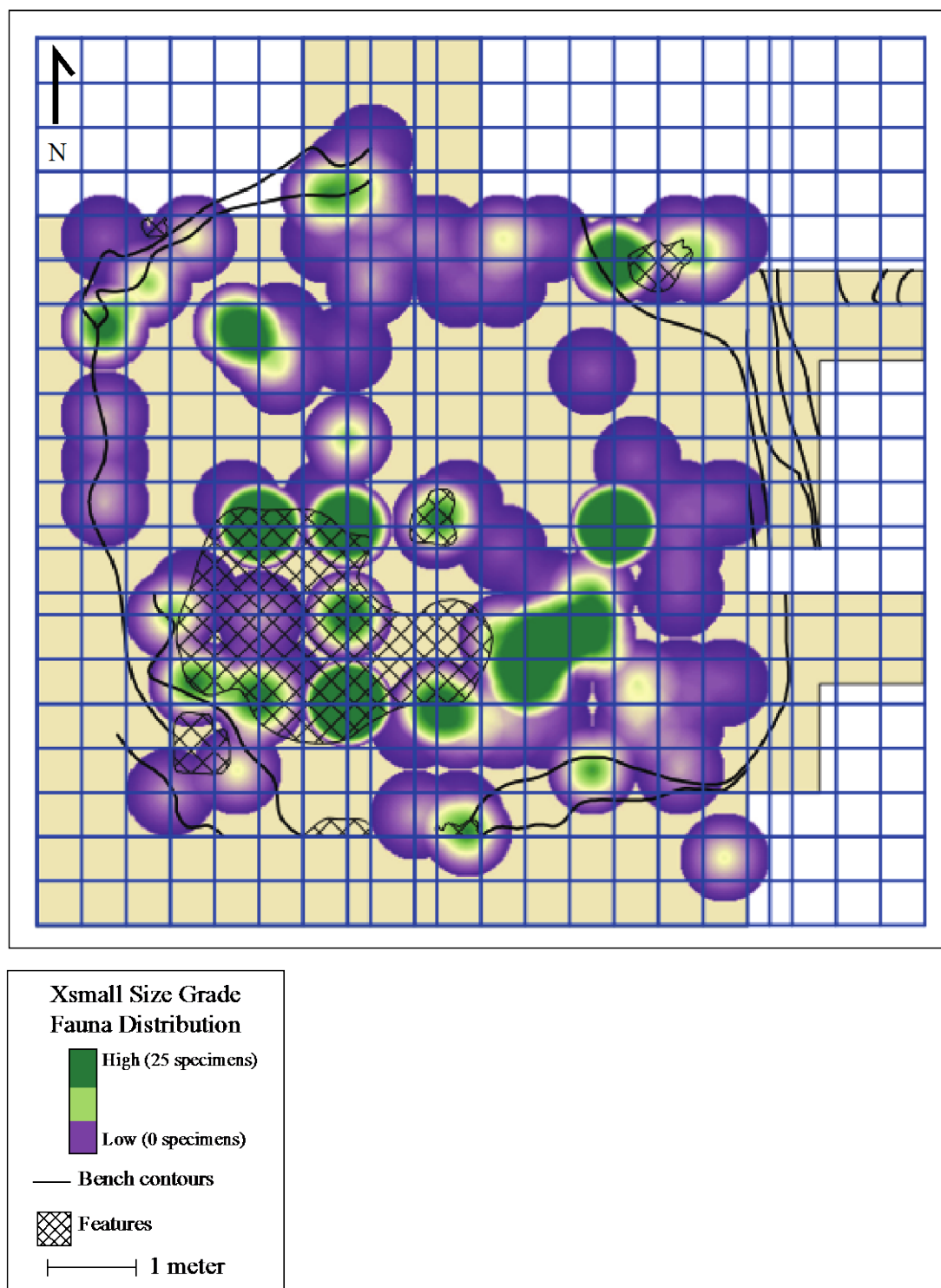


Figure B.34. Fauna Distribution by Size Grade Xsmall.

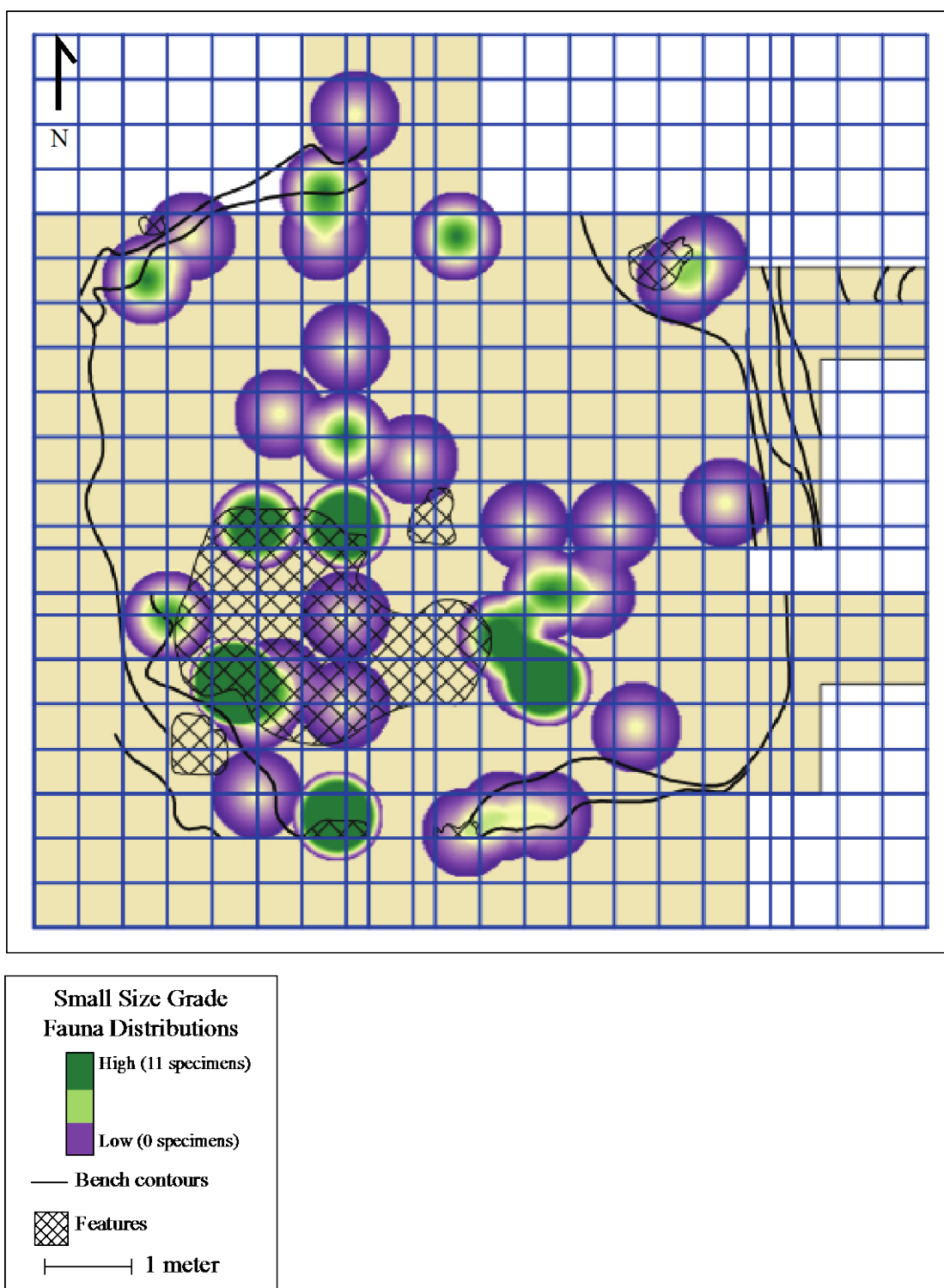


Figure B.35. Fauna Distribution by Size Grade Small.

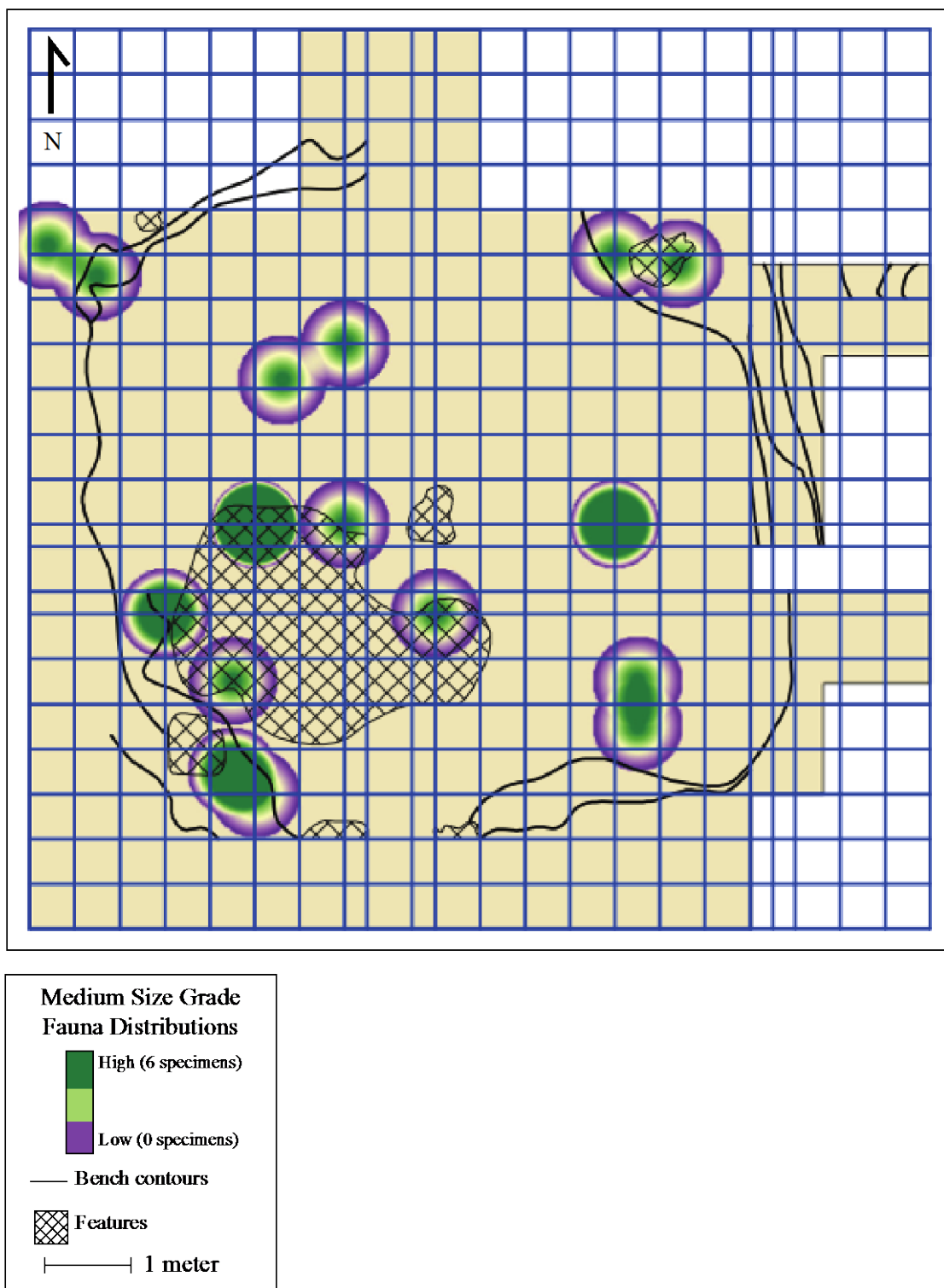


Figure B.36. Fauna Distribution by Size Grade Medium.

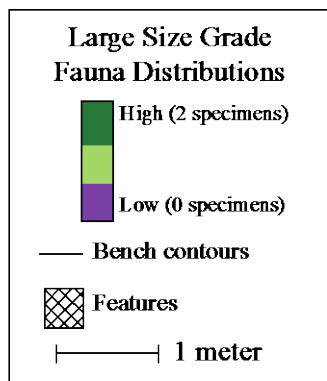
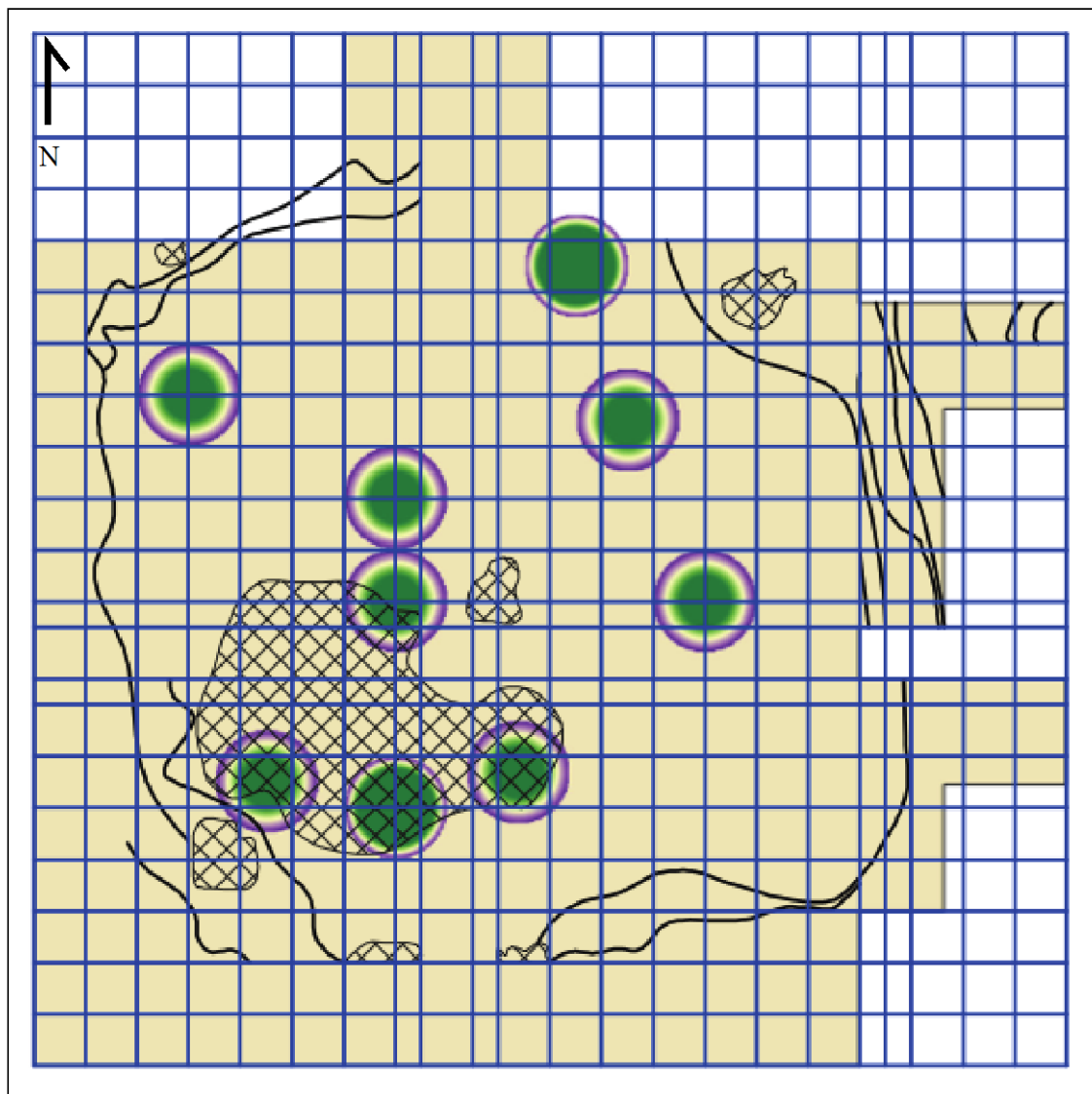


Figure B.37. Fauna Distribution by Size Grade Large.

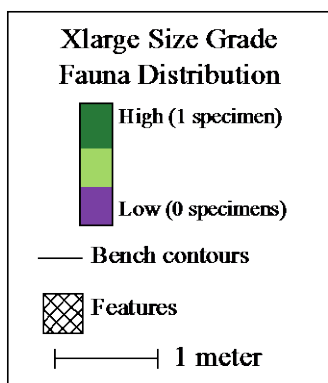
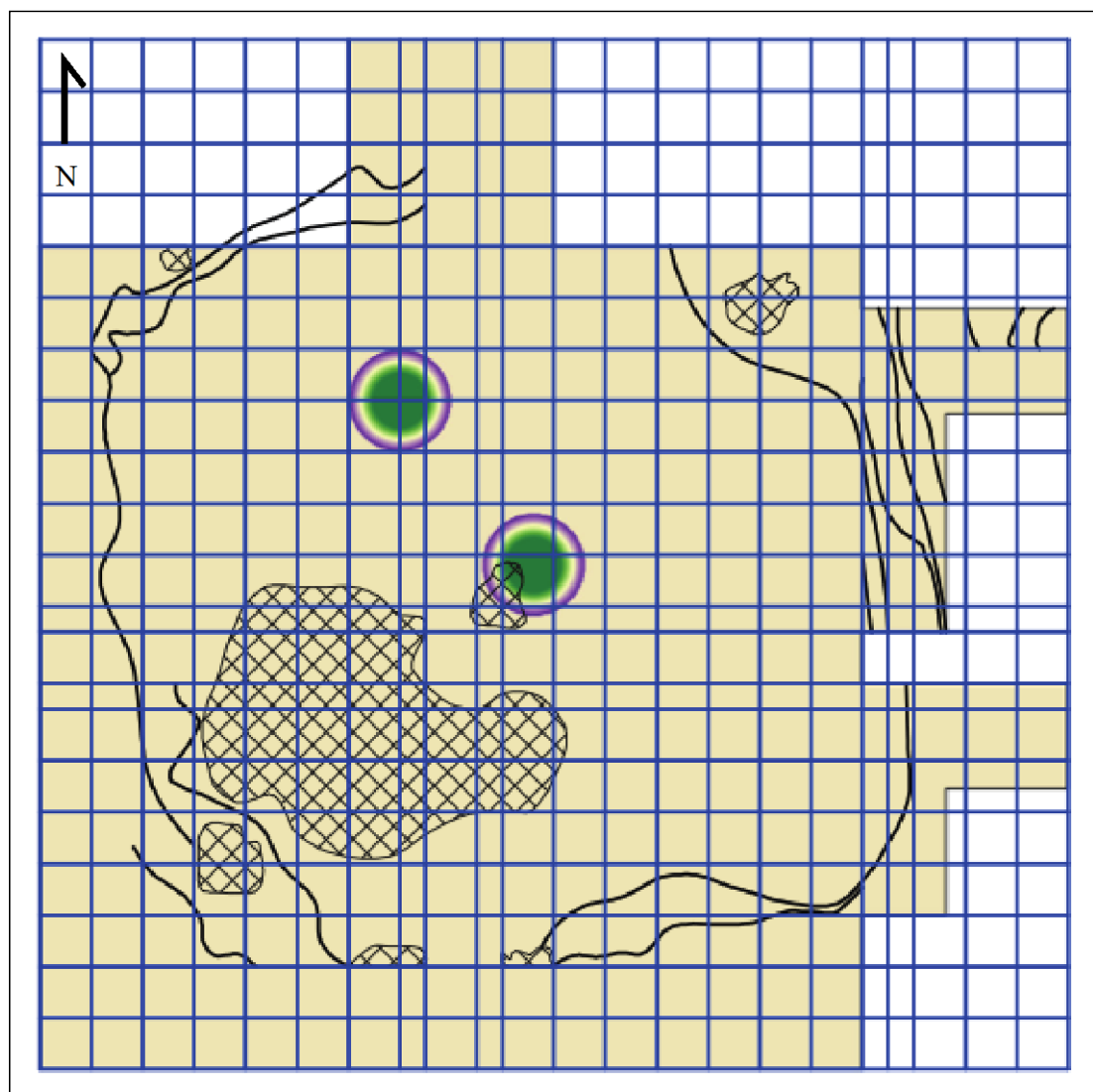


Figure B.38. Fauna Distribution by Size Grade Xlarge.

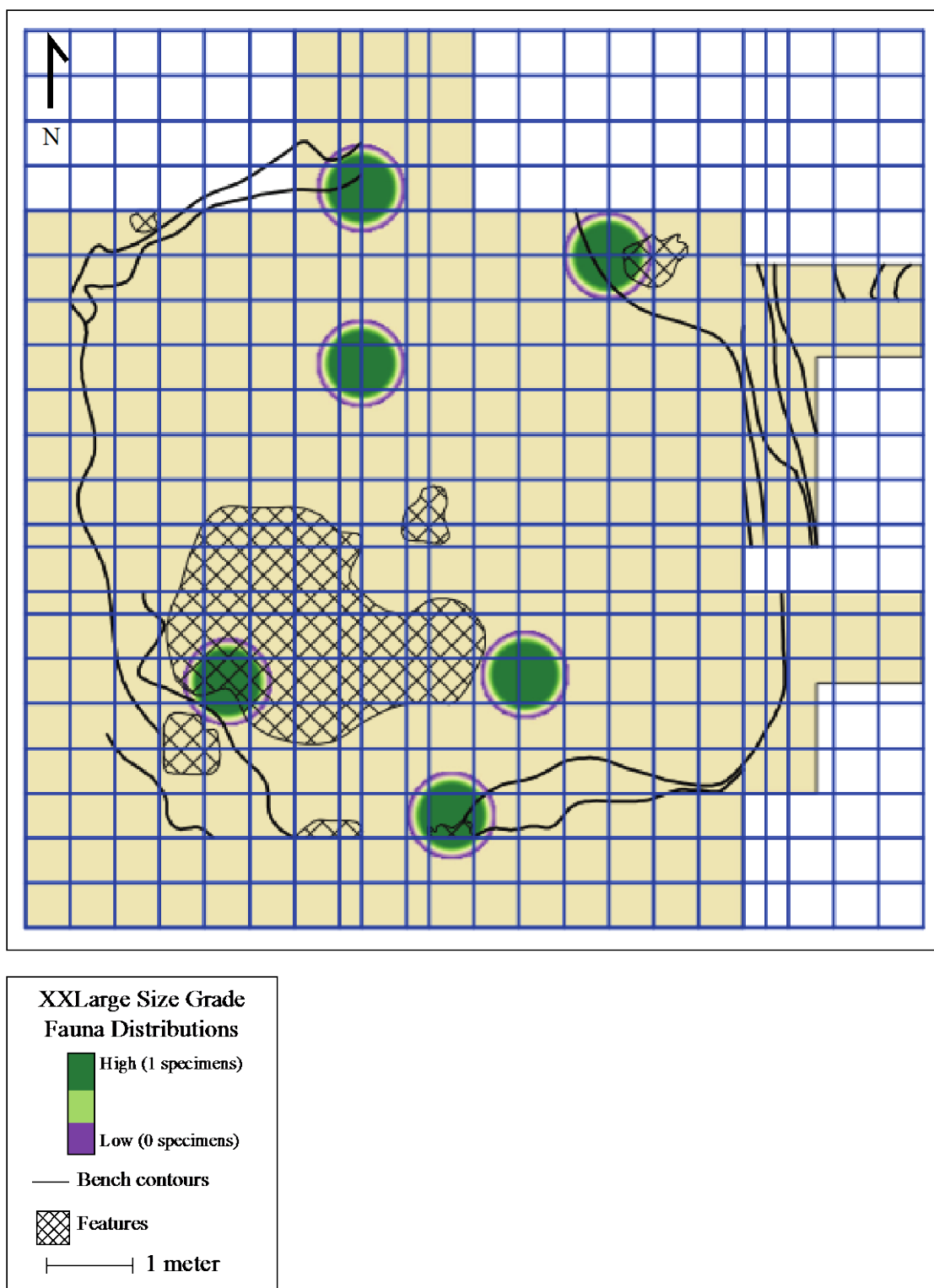


Figure B.39. Fauna Distribution by Size Grade Xxlarge.

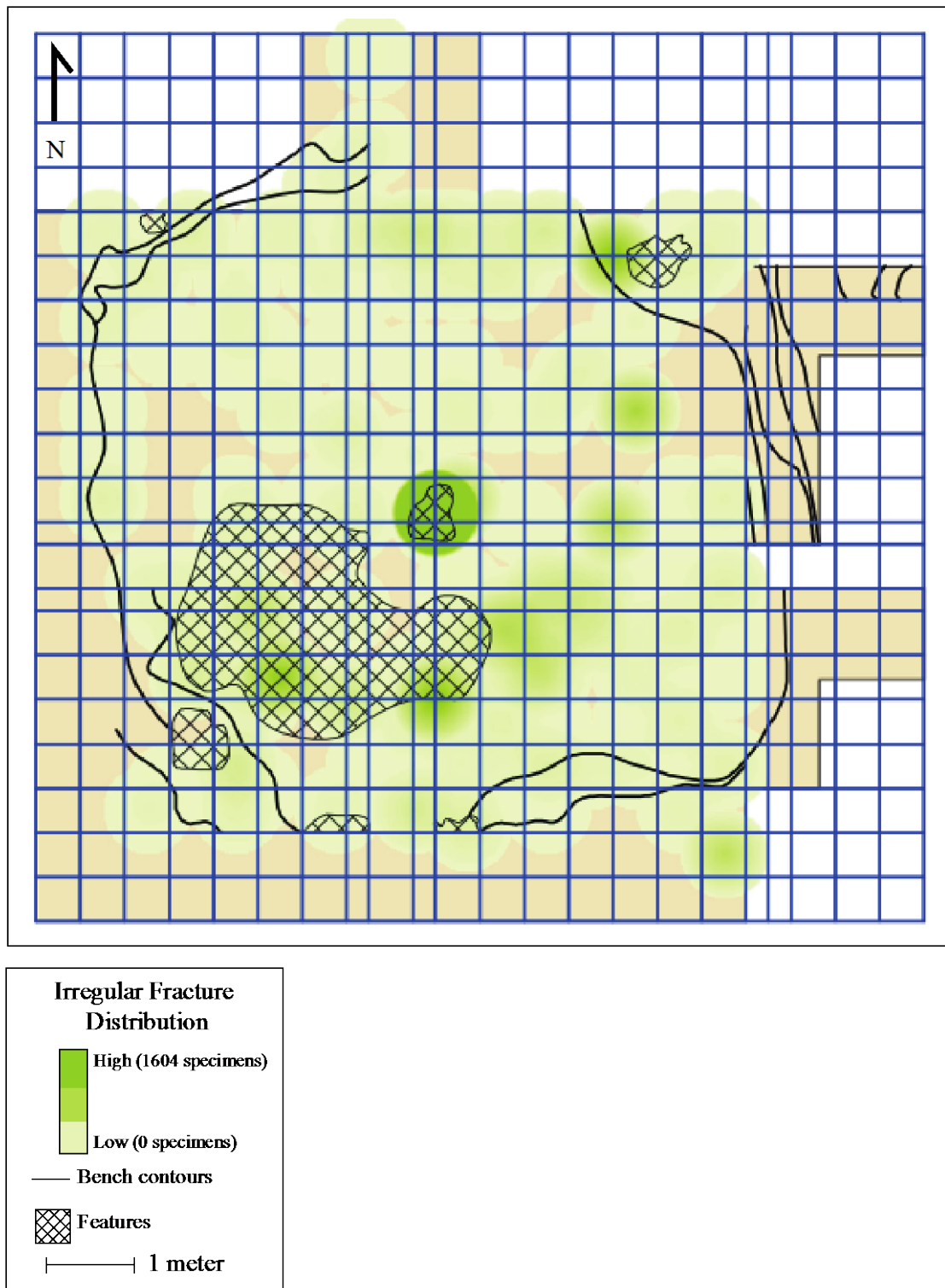


Figure B.40. Fauna Distribution by Fracture Type – Irregular.

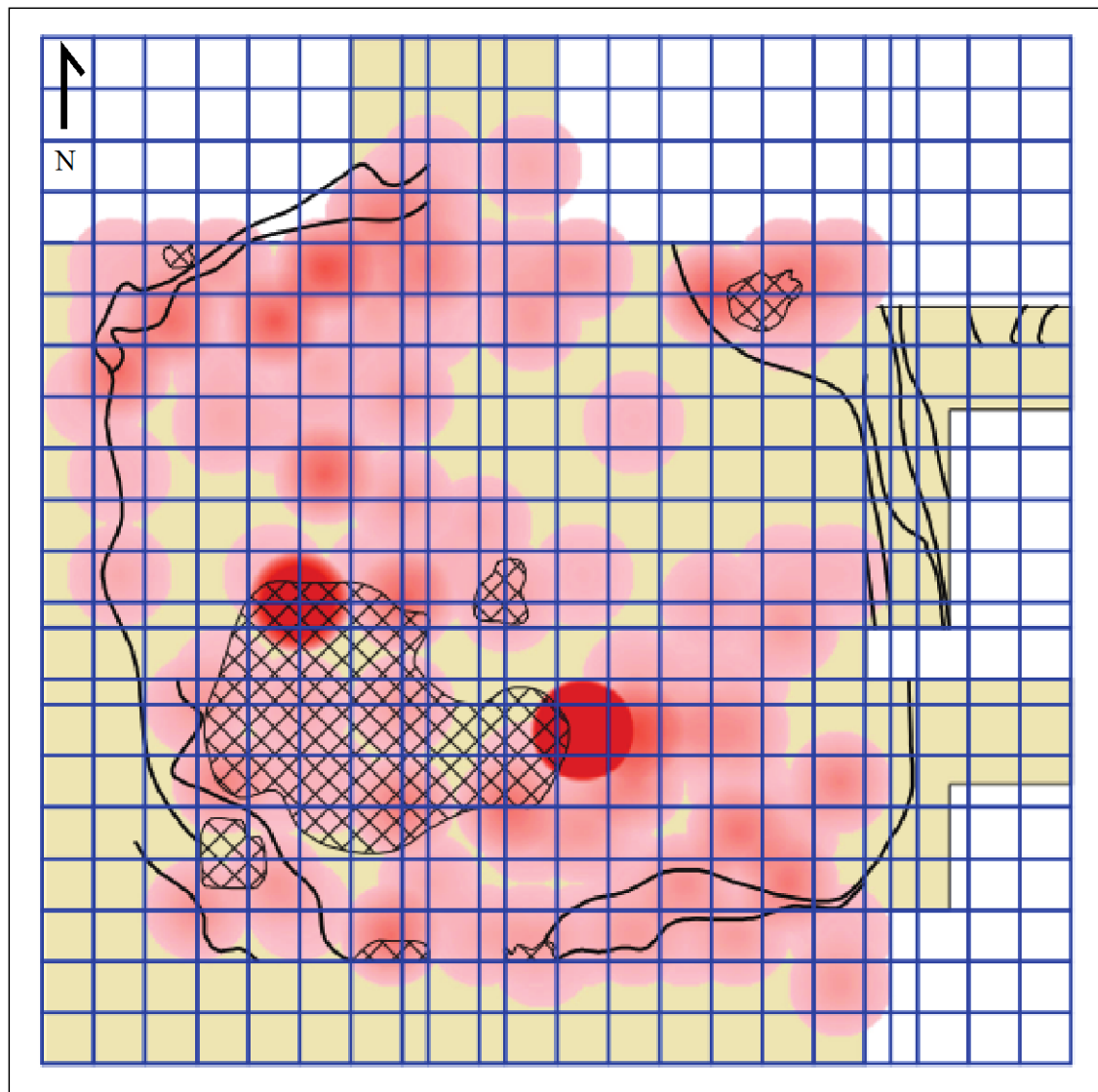


Figure B.41. Fauna Distribution by Fracture Type – Oblique.

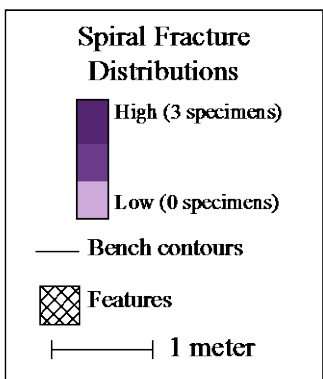
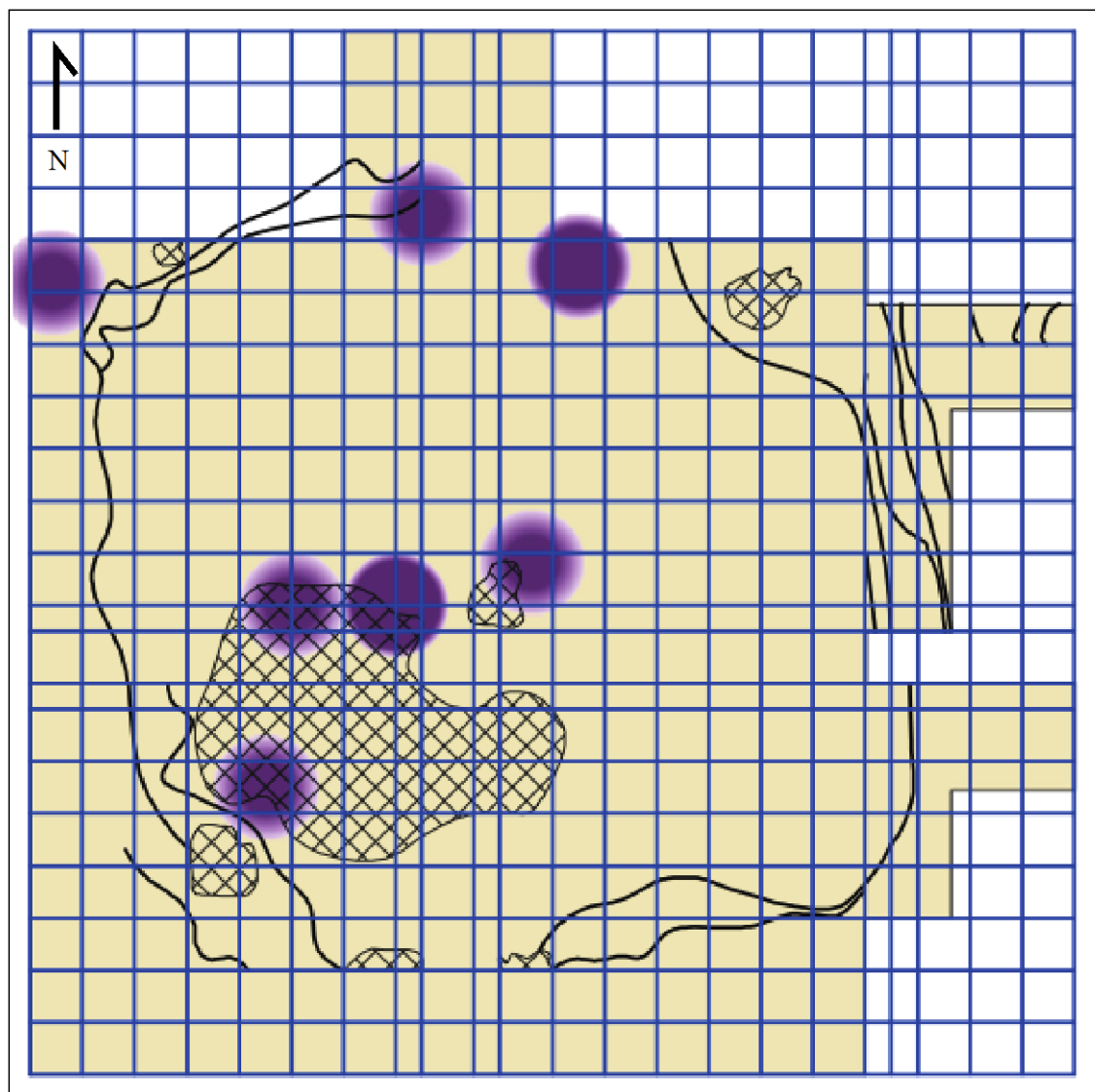


Figure B.42. Fauna Distribution by Fracture Type – Spiral.

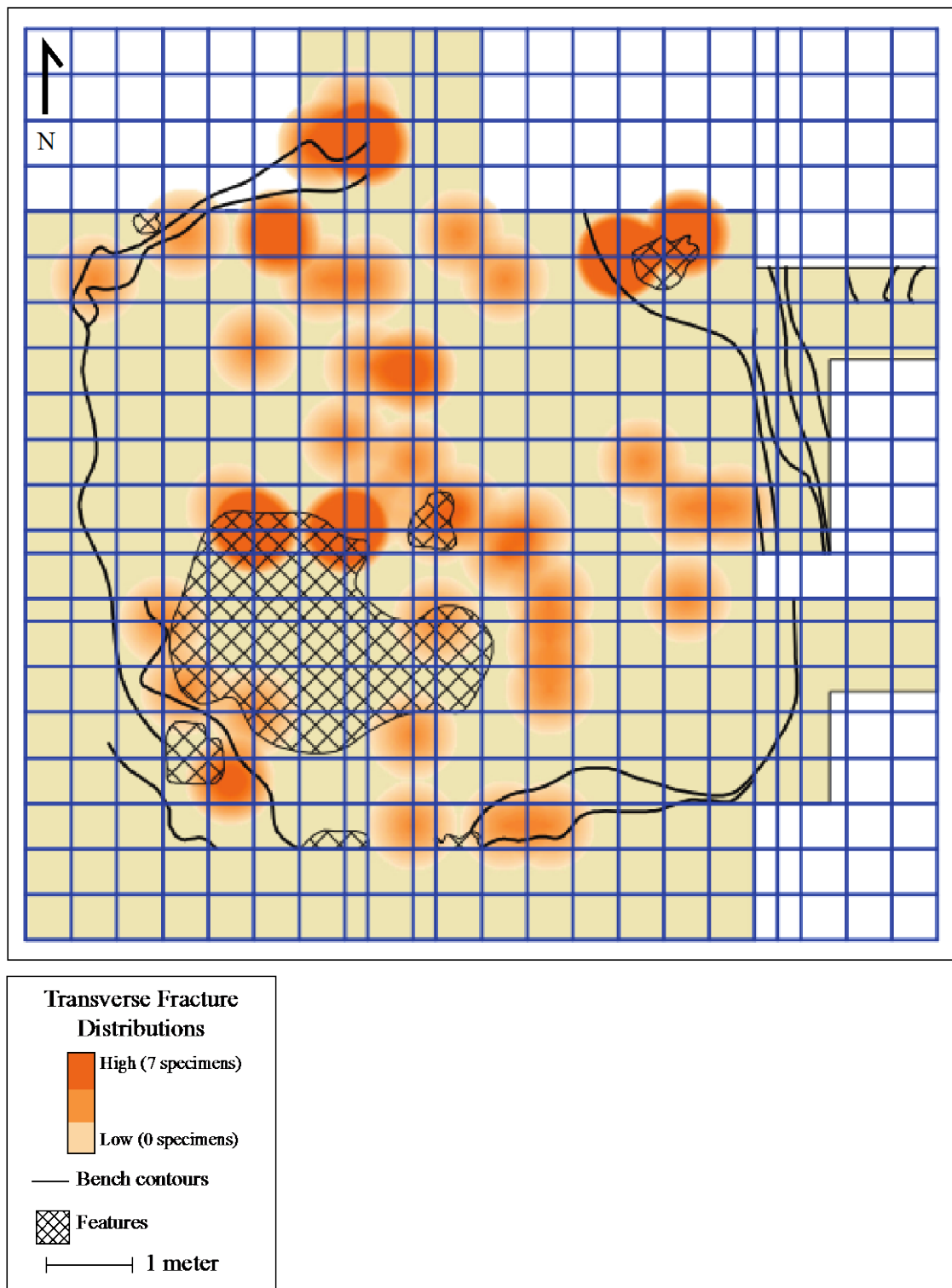


Figure B.43. Fauna Distribution by Fracture Type – Transverse.

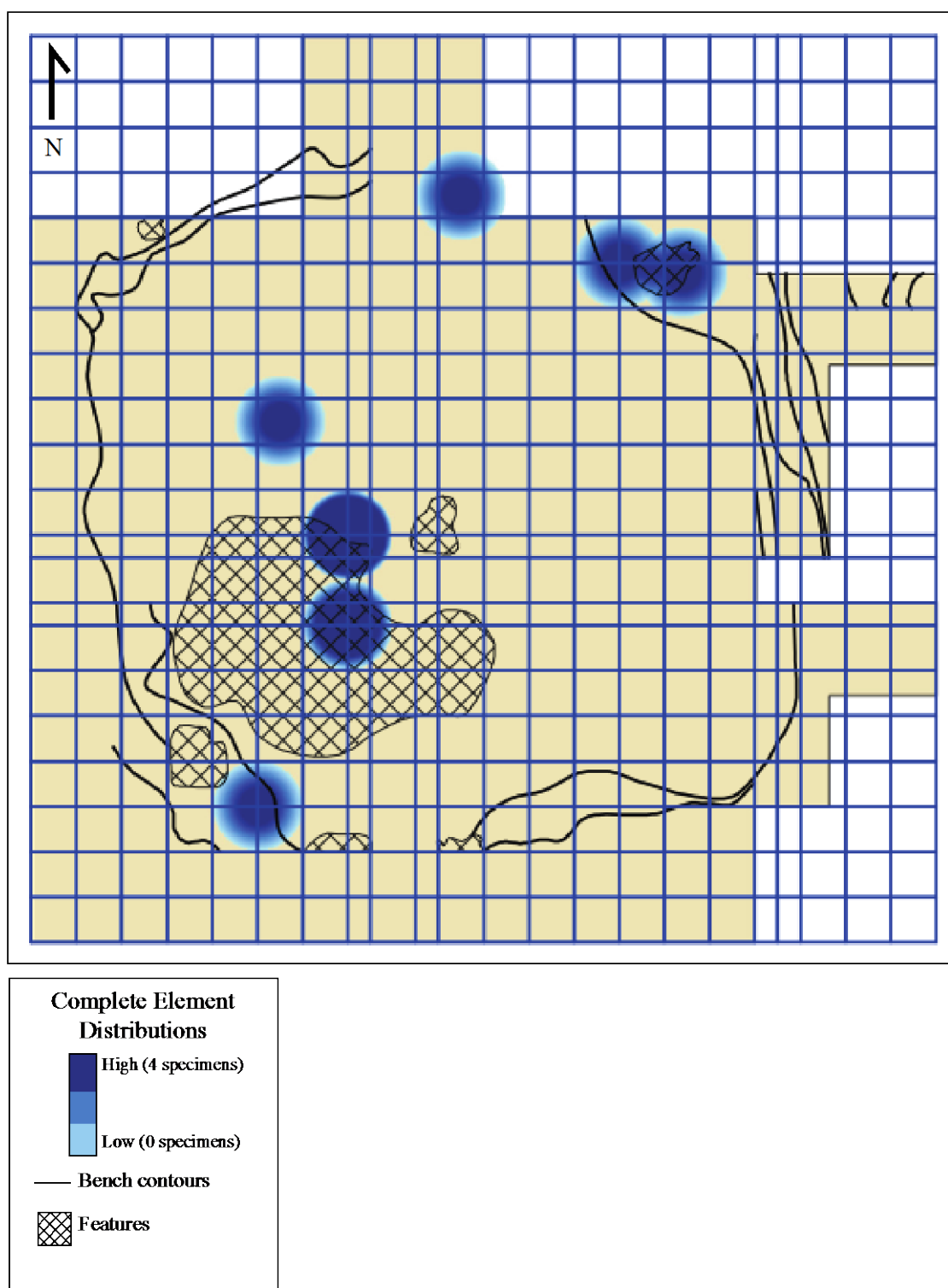


Figure B.44. Fauna Distribution by Fracture Type – Complete.

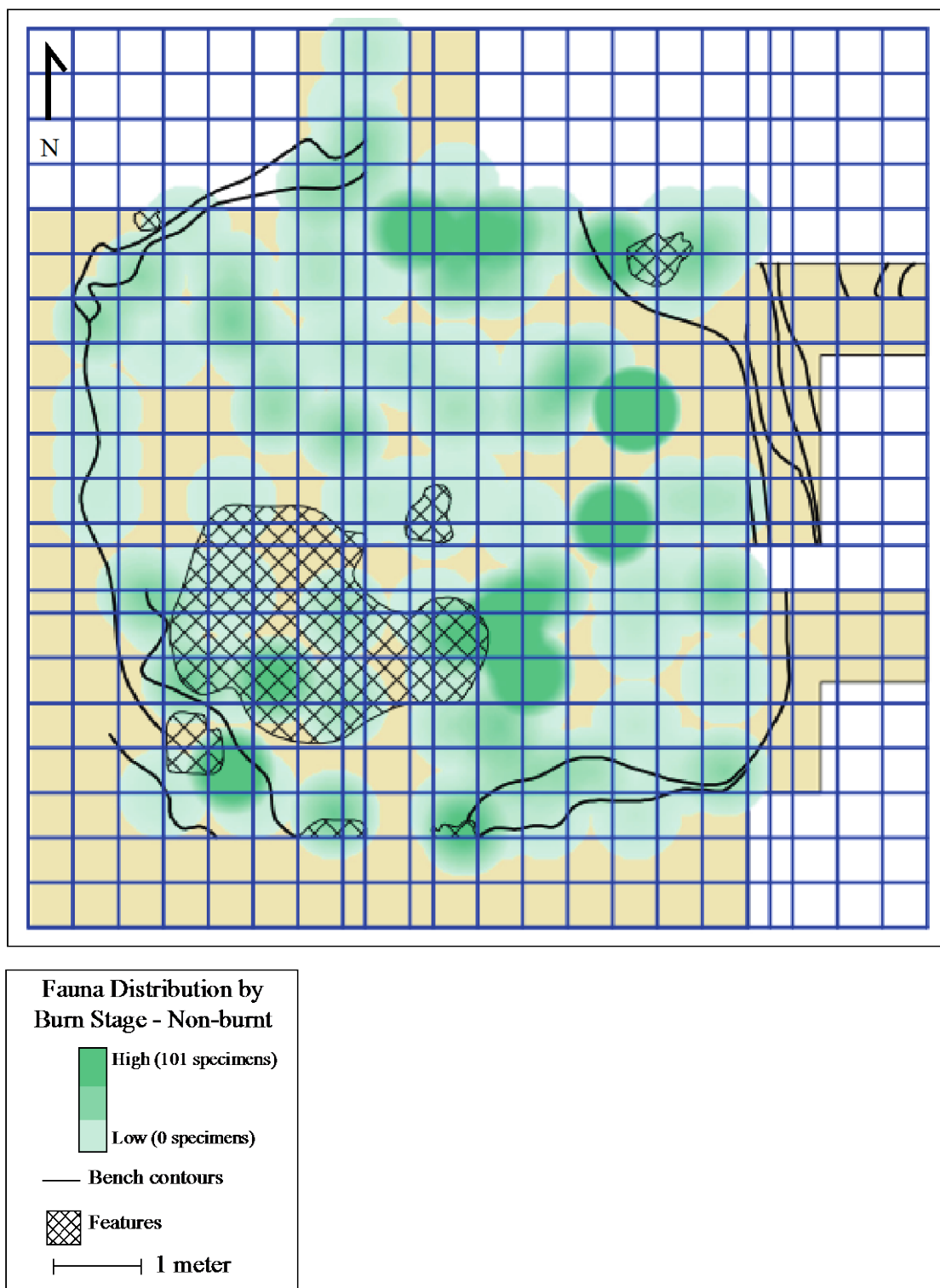


Figure B.45. Fauna Distribution by Burn Stage – Non-burnt.

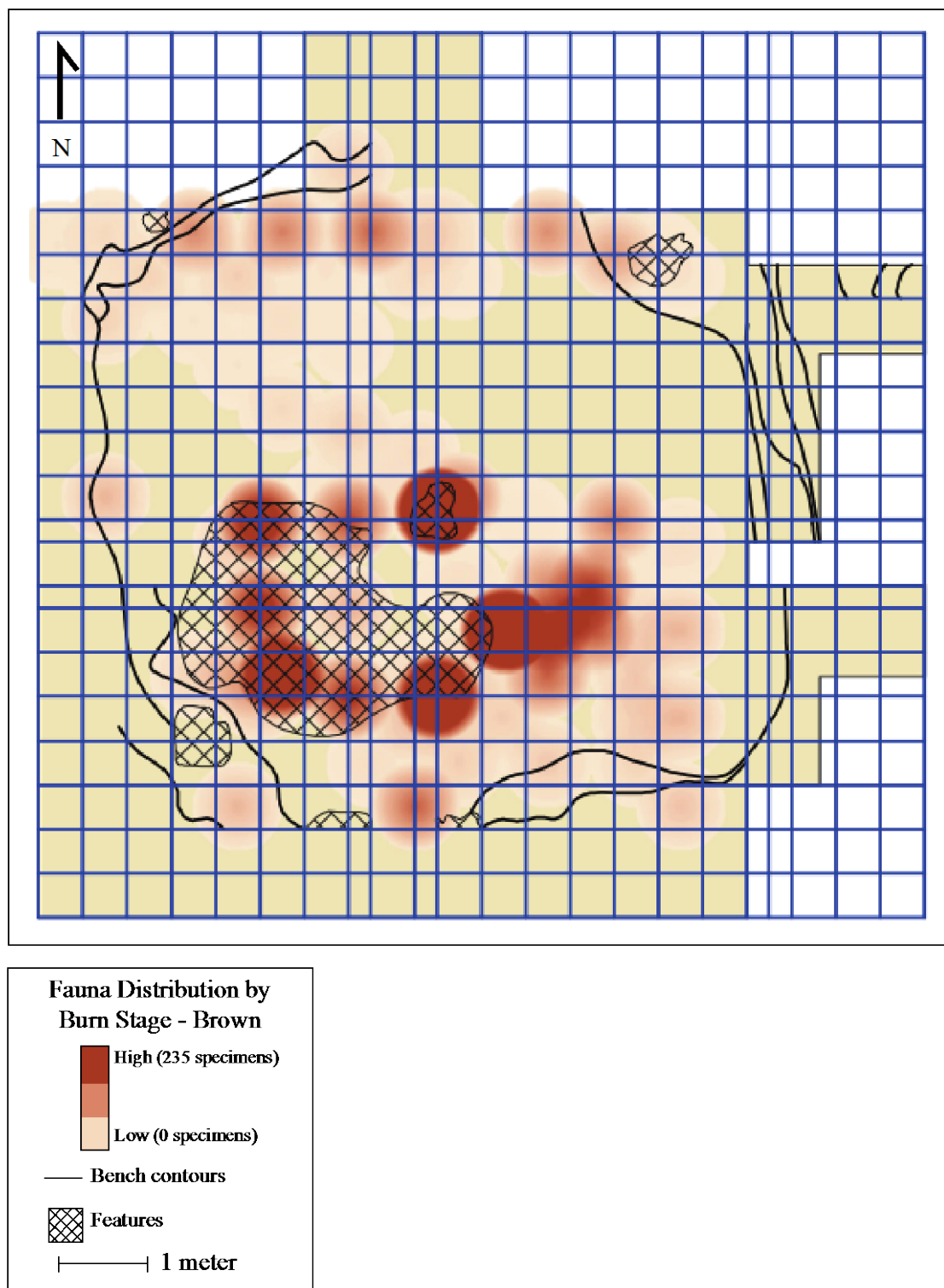


Figure B.46. Fauna Distribution by Burn Stage – Brown.

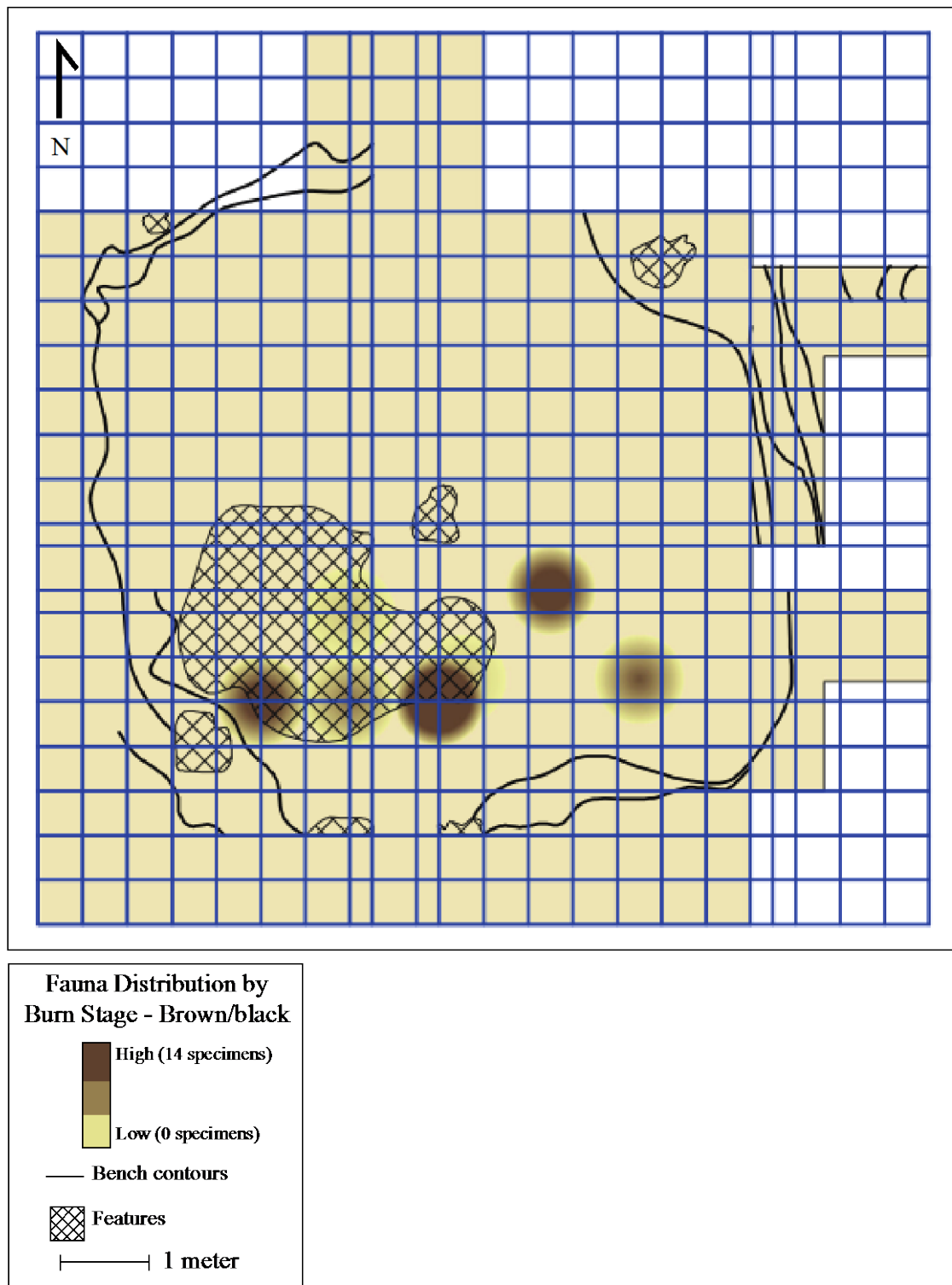


Figure B.47. Fauna Distribution by Burn Stage – Brown/black.

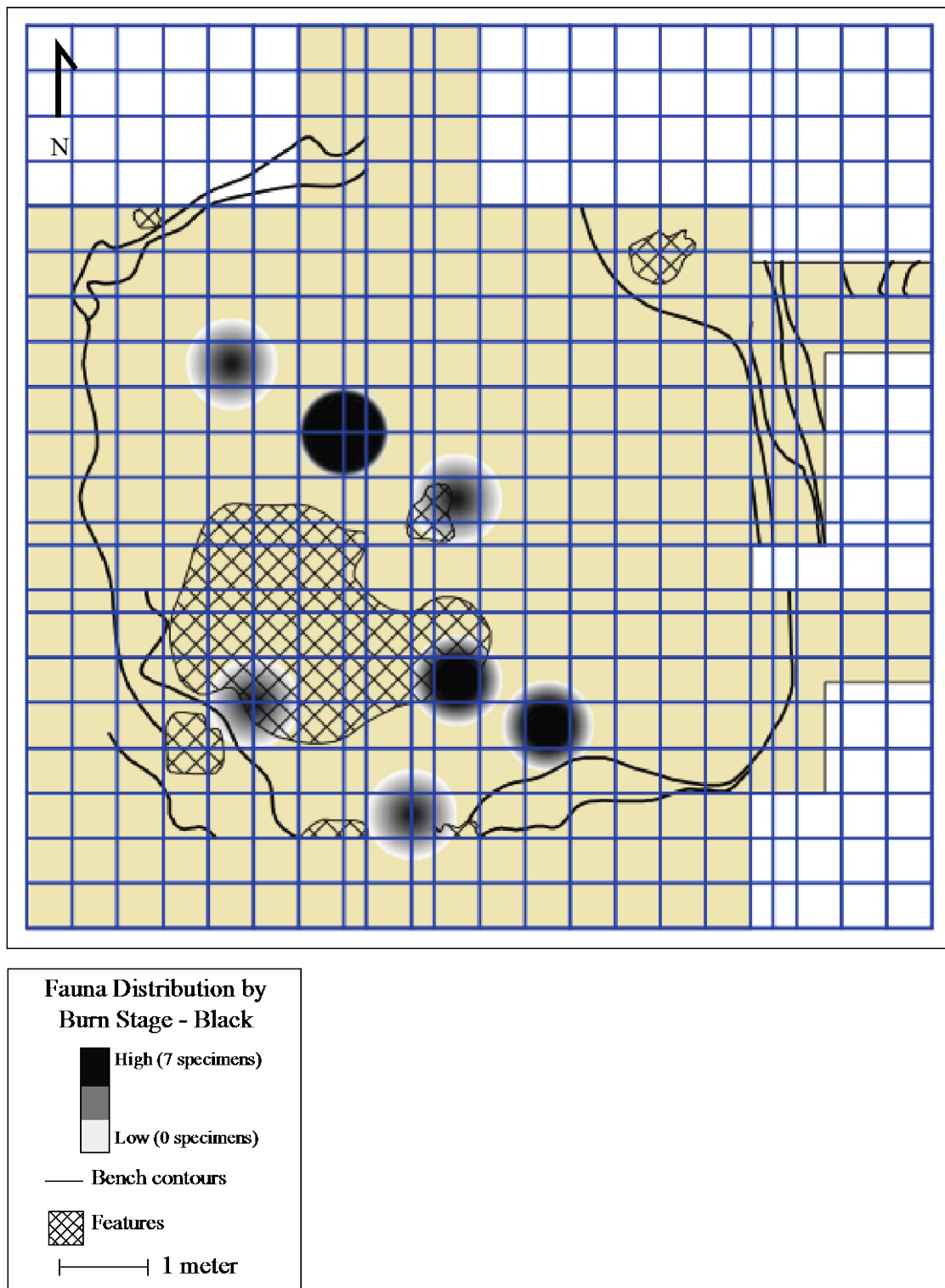


Figure B.48. Fauna Distribution by Burn Stage – Black.

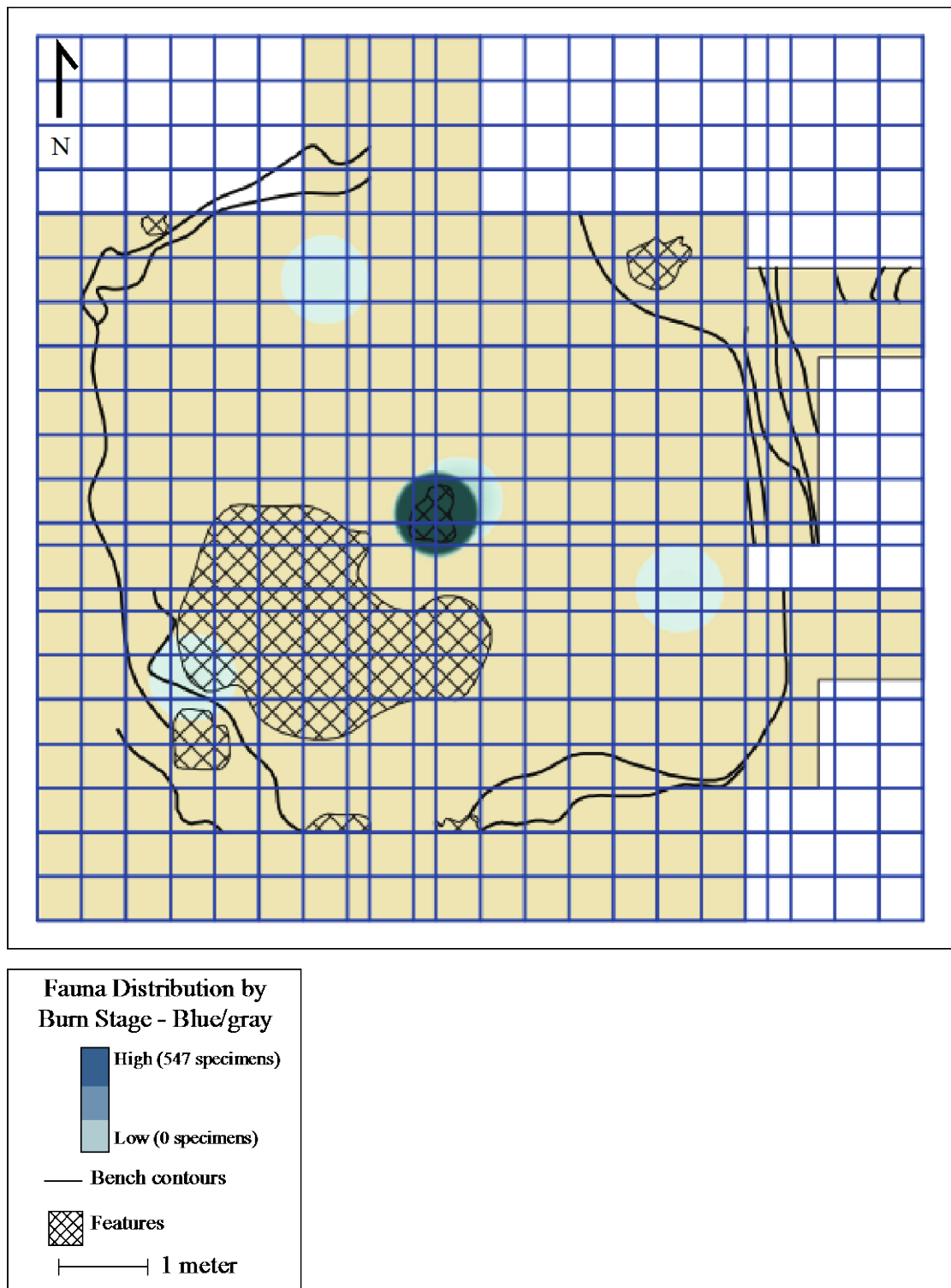


Figure B.49. Fauna Distribution by Burn Stage – Blue/gray.

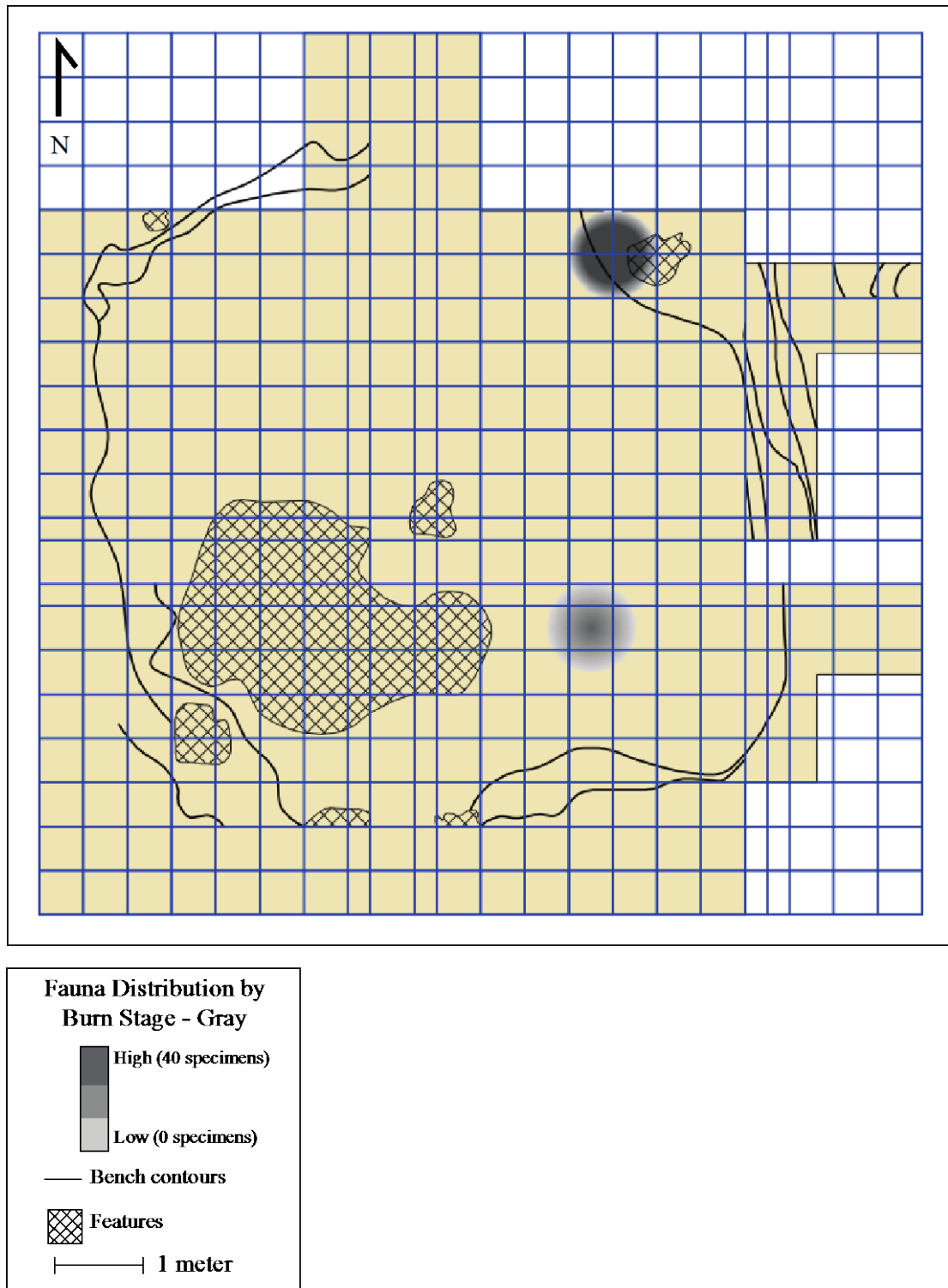


Figure B.50. Fauna Distribution by Burn Stage – Gray.

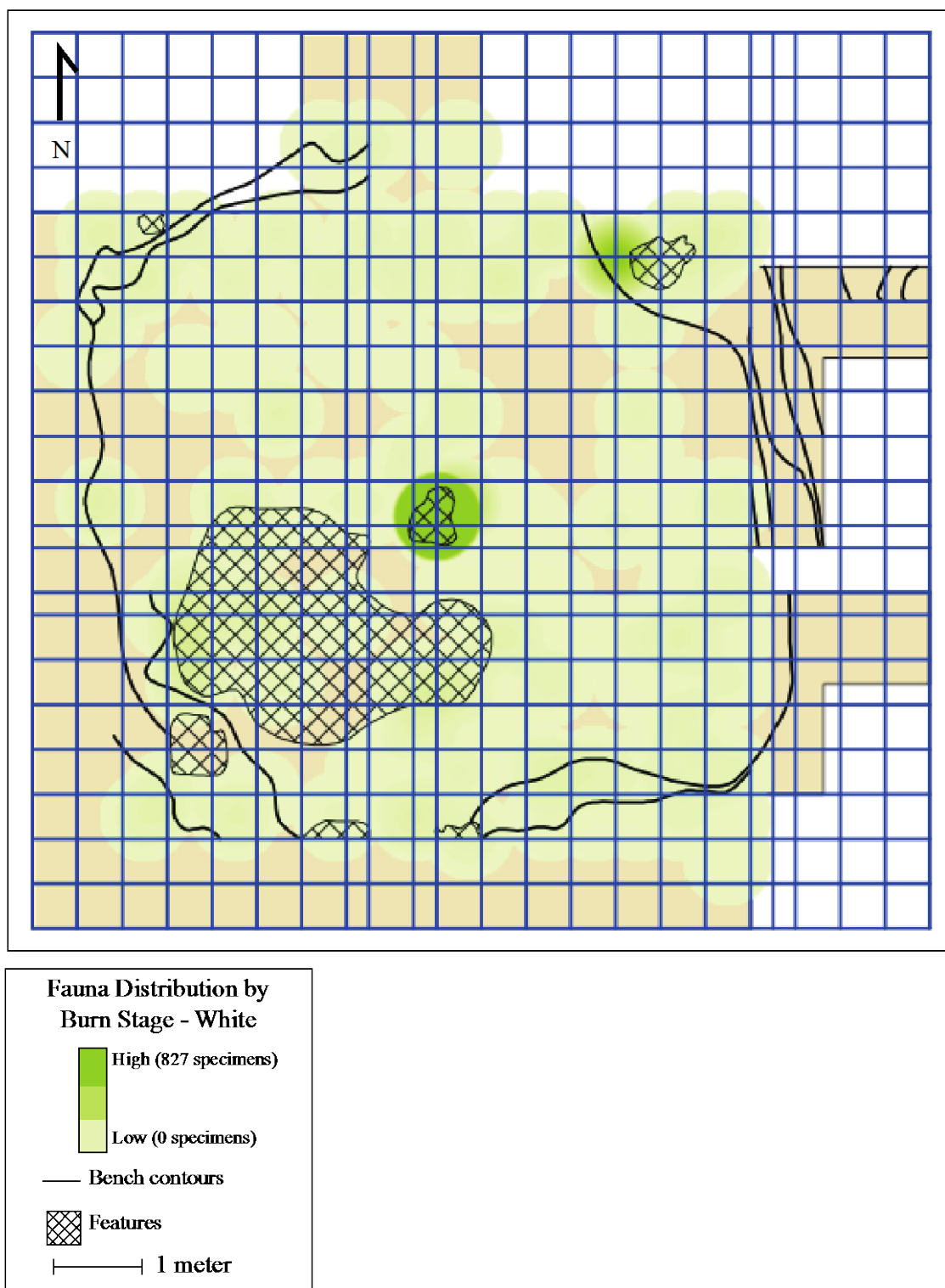


Figure B.51. Fauna Distribution by Burn Stage – White.

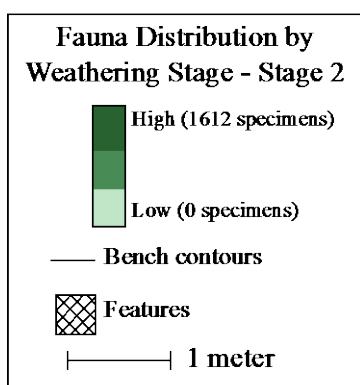
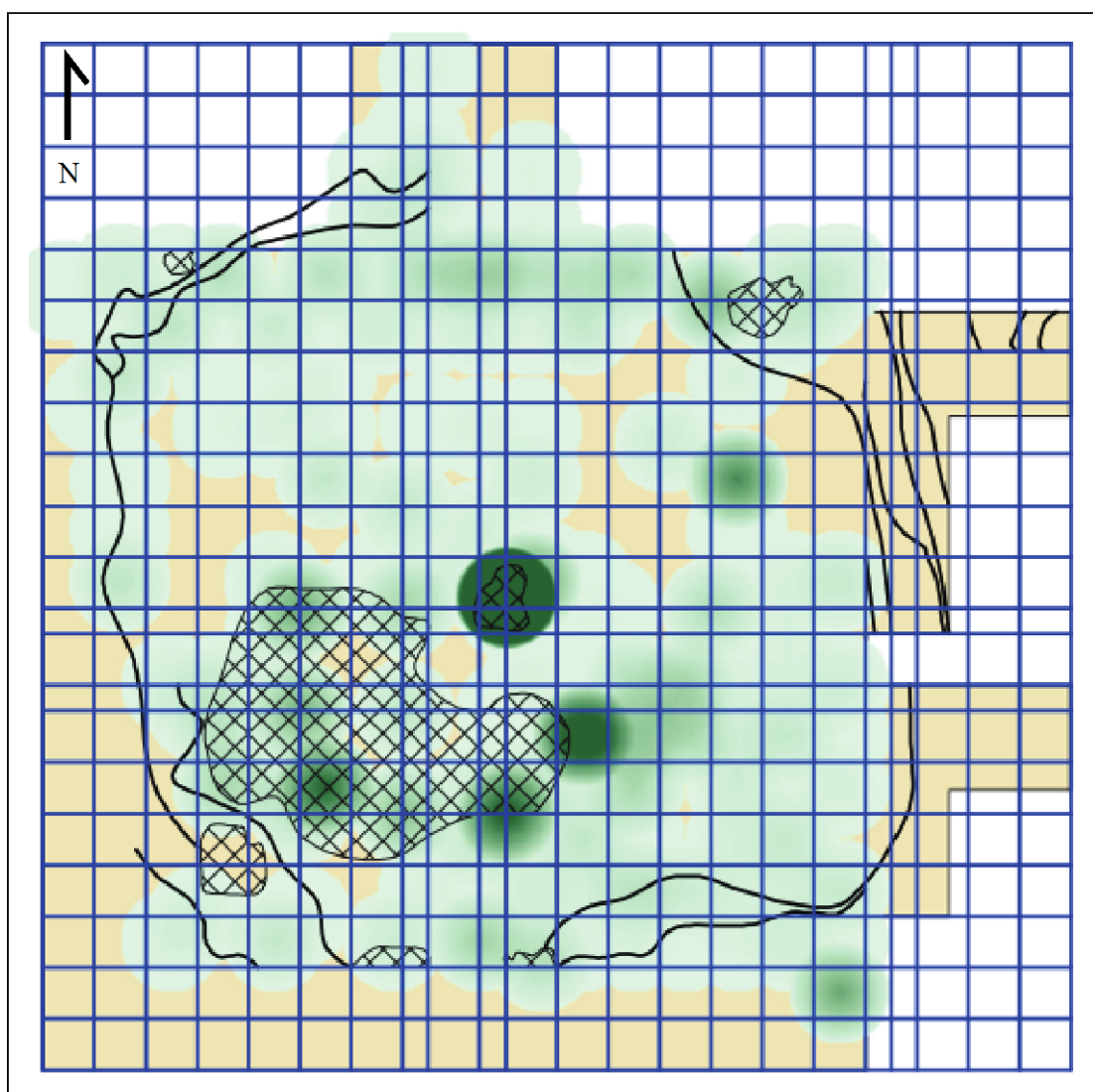


Figure B.52. Fauna Distribution by Weathering Stage 2.

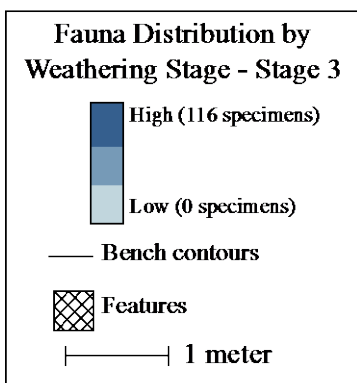
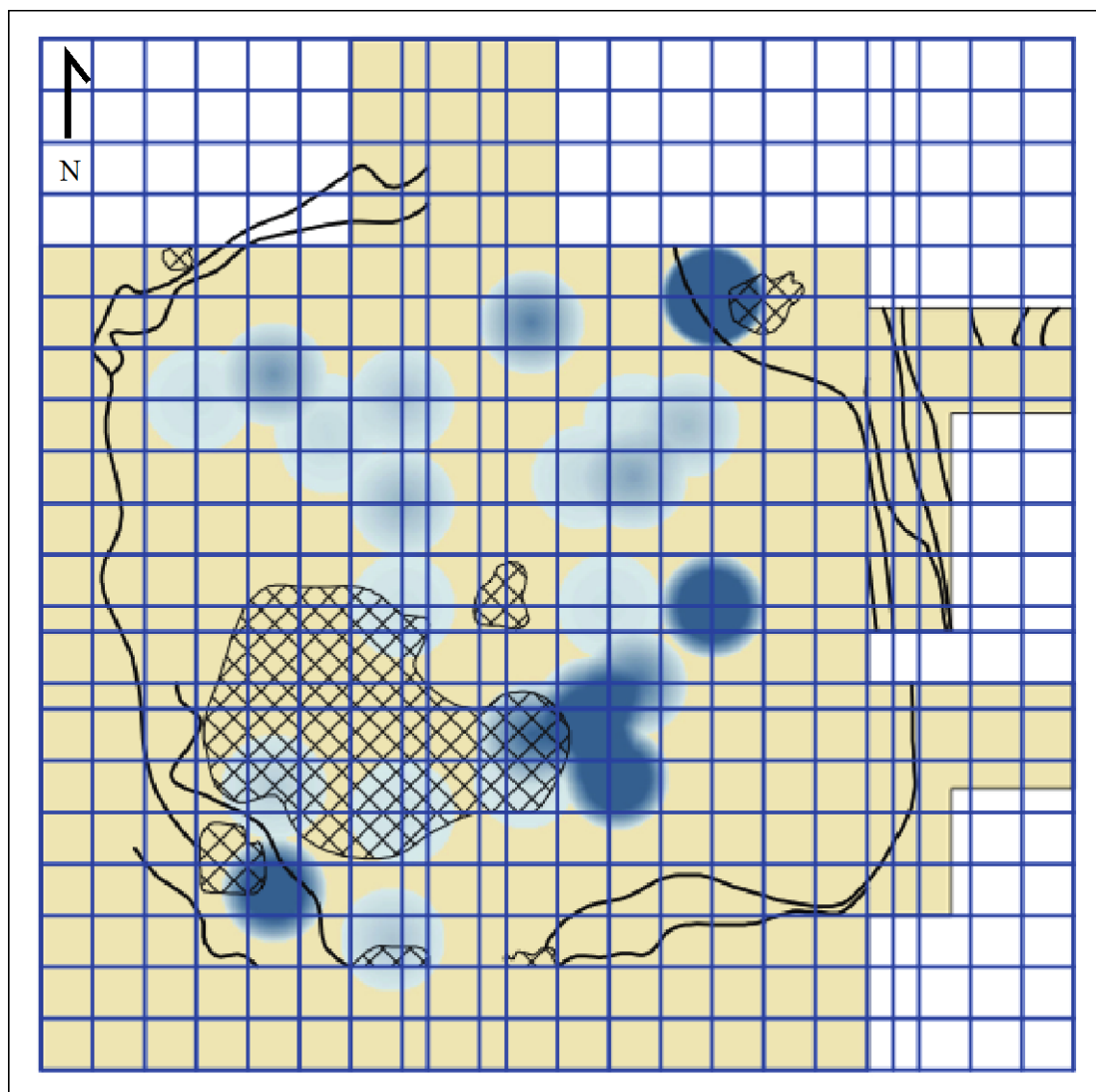


Figure B.53. Fauna Distribution by Weathering Stage 3.

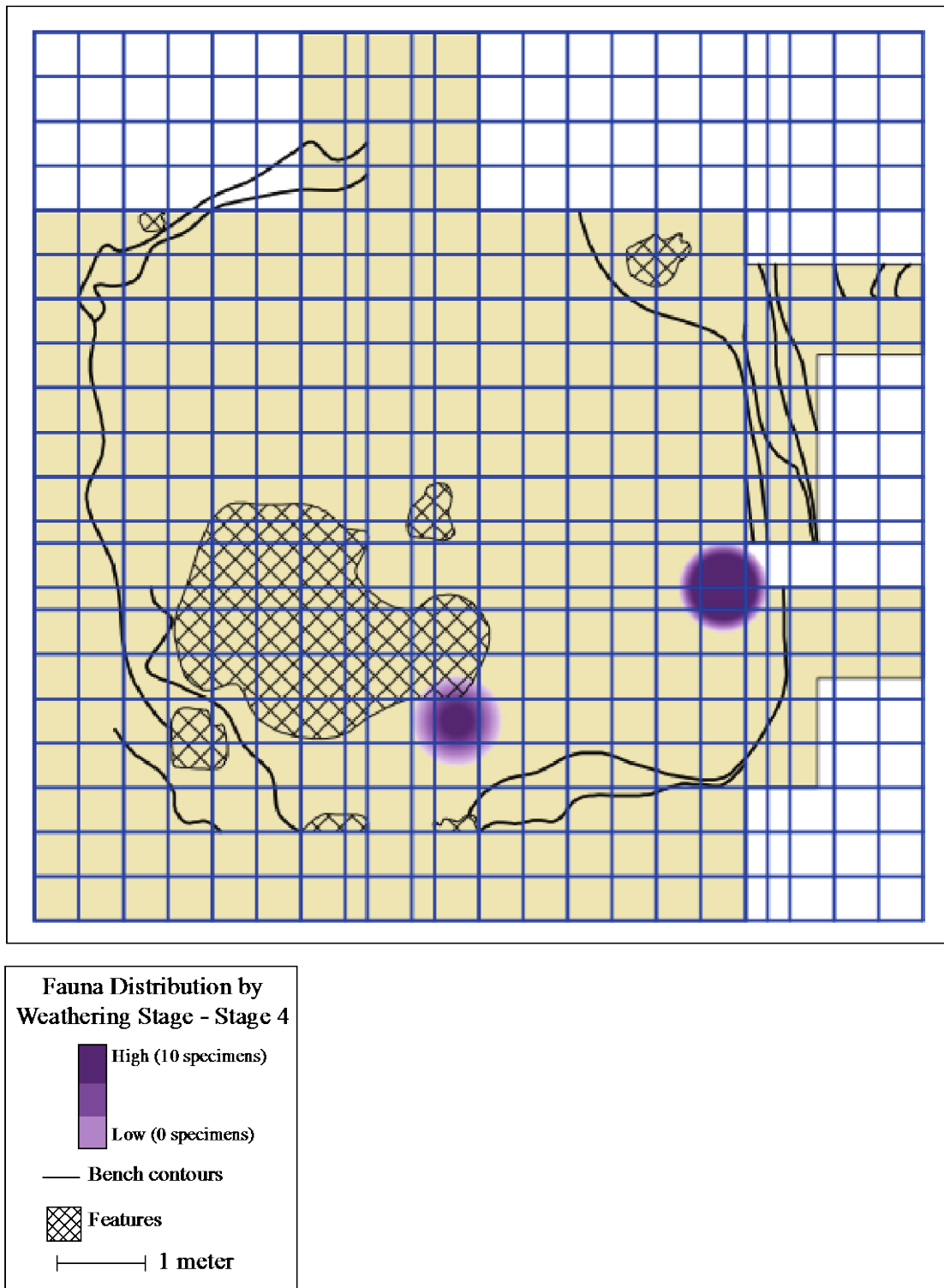
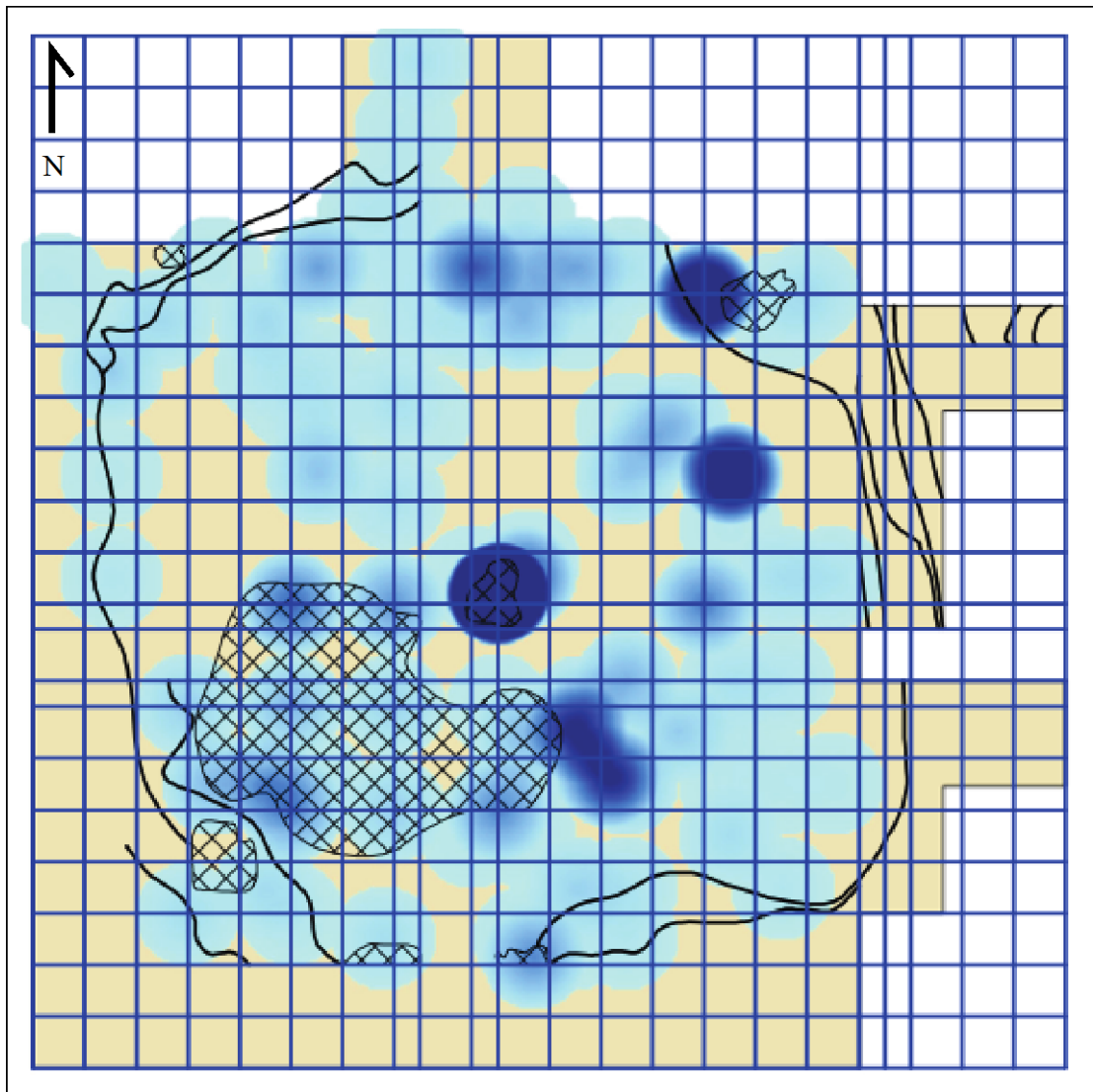


Figure B.54. Fauna Distribution by Weathering Stage 4.



High Species Utility Distributions

High (457 specimens)

Low (0 specimens)

— Bench contours

Features

1 meter

Figure B.55. Fauna Distribution by Species Utility – High.

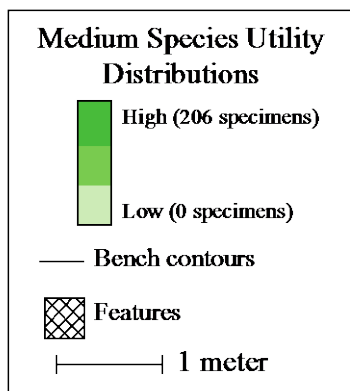
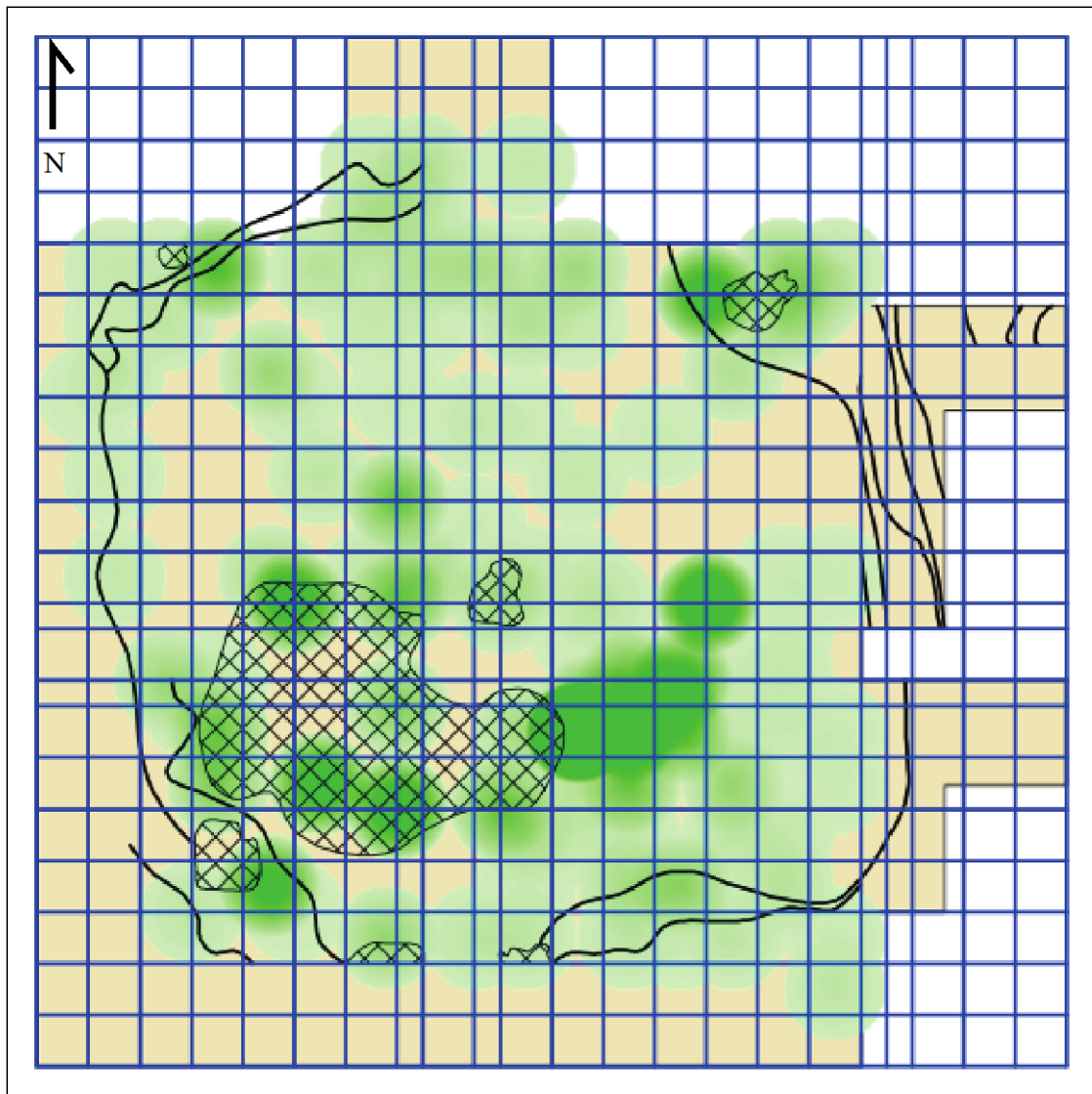


Figure B.56. Fauna Distribution by Species Utility – Medium.

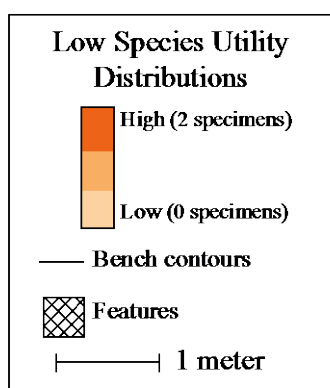
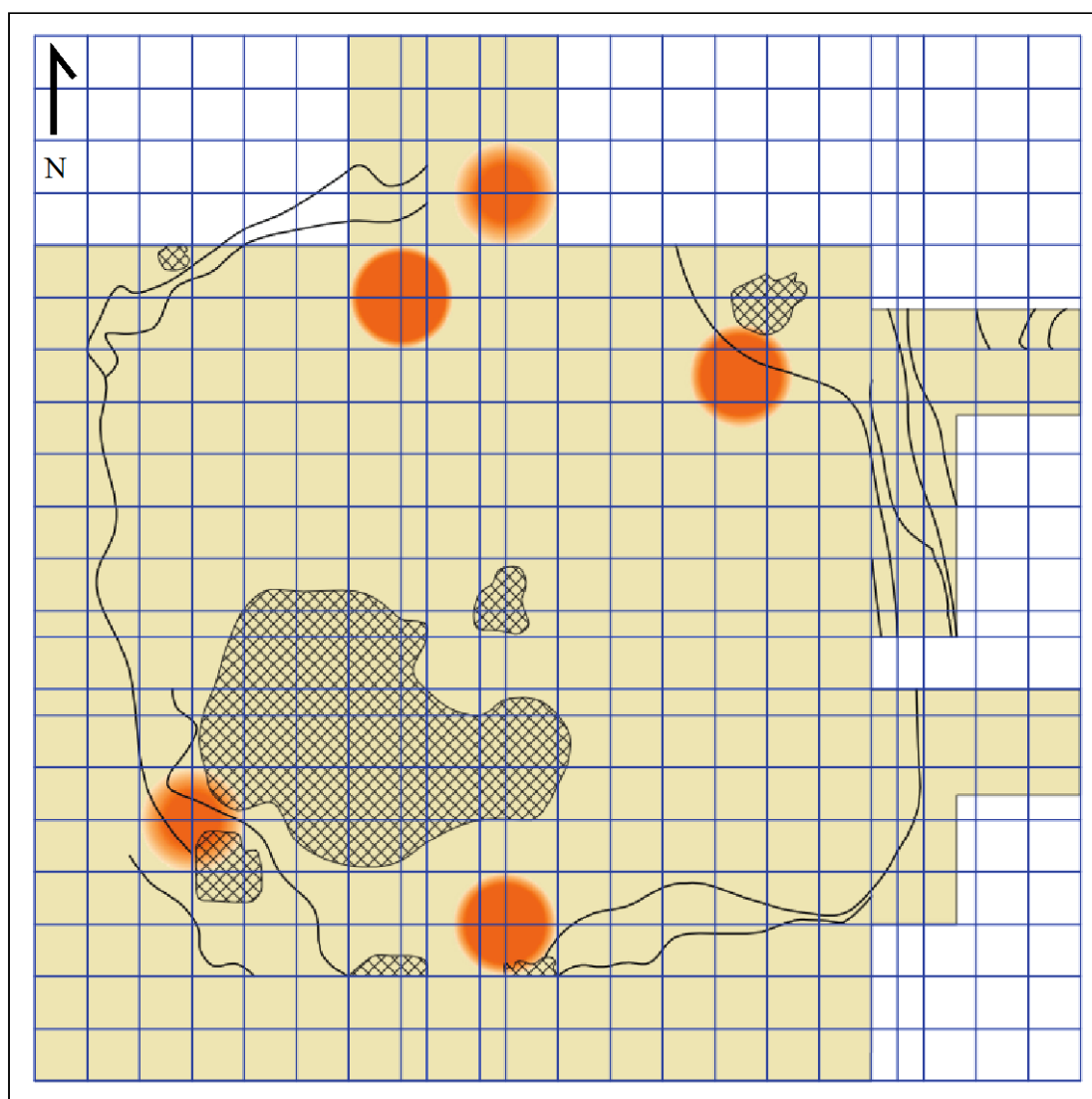


Figure B.57. Fauna Distribution by Species Utility – Low.

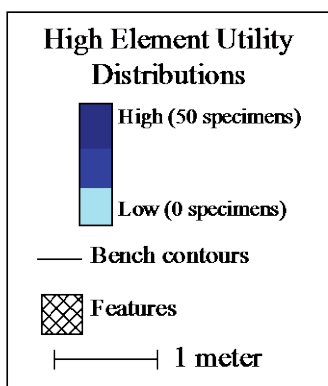
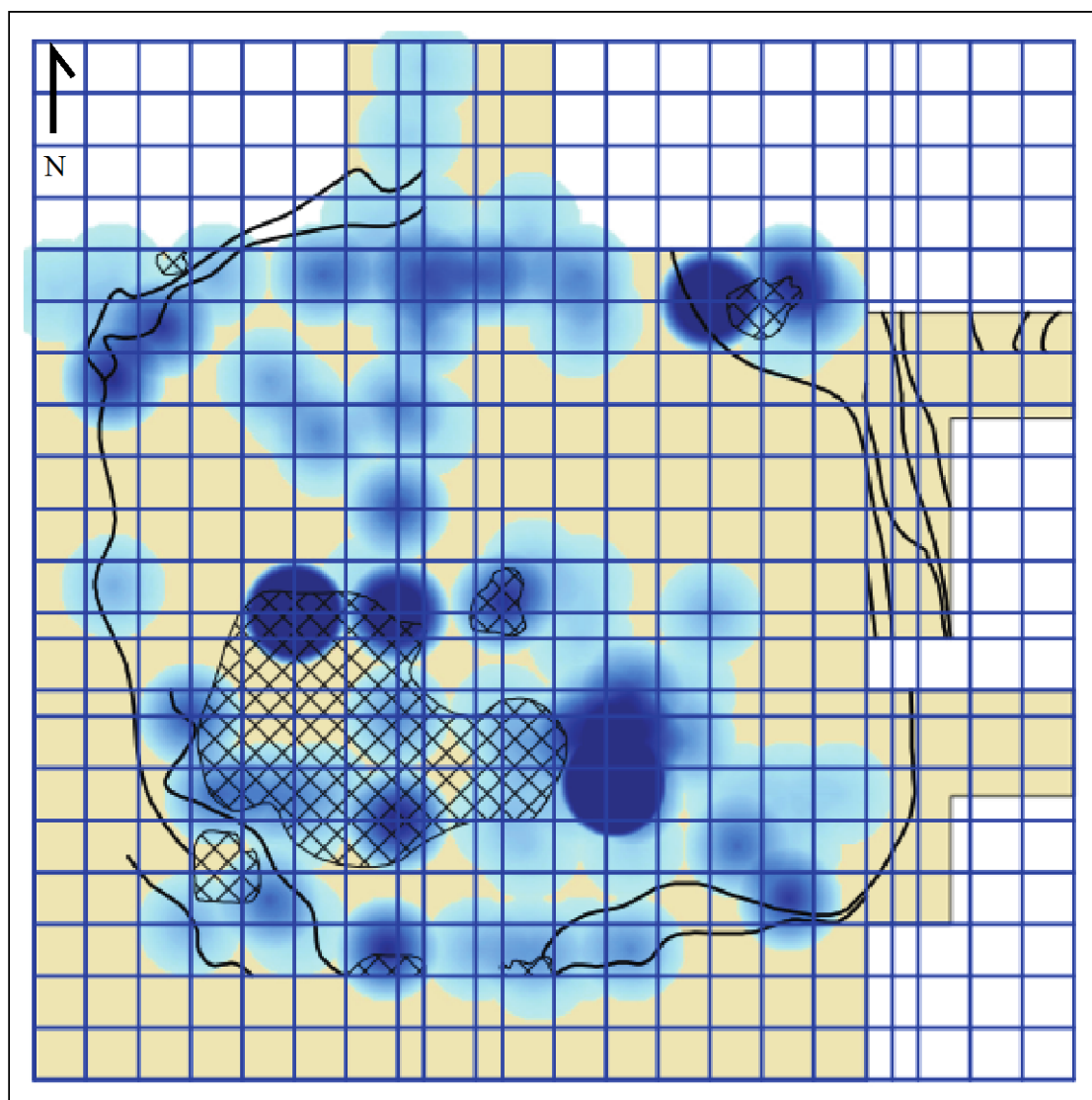


Figure B.58. Fauna Distribution by Element Utility – High.

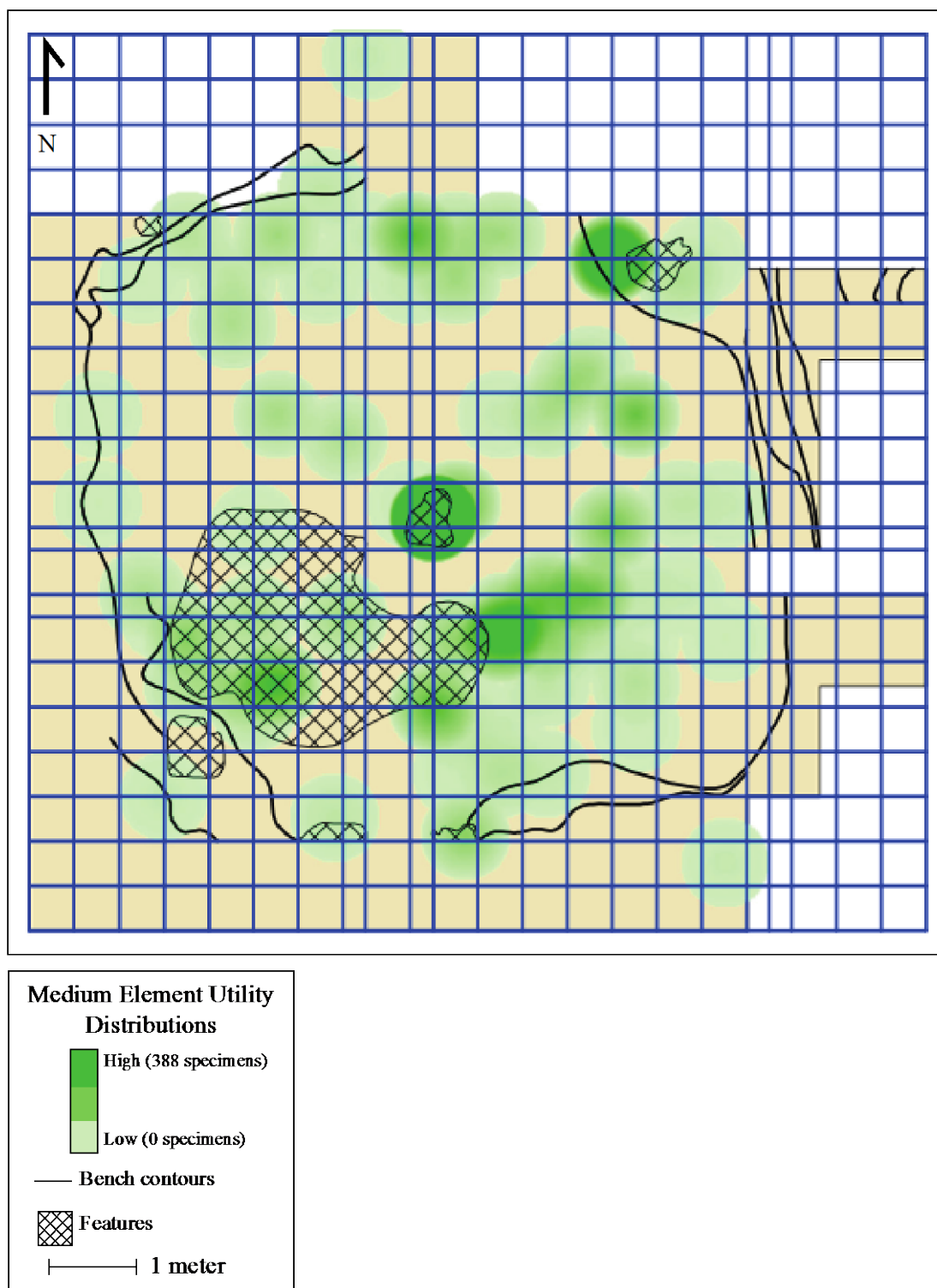


Figure B.59. Fauna Distribution by Element Utility – Medium.

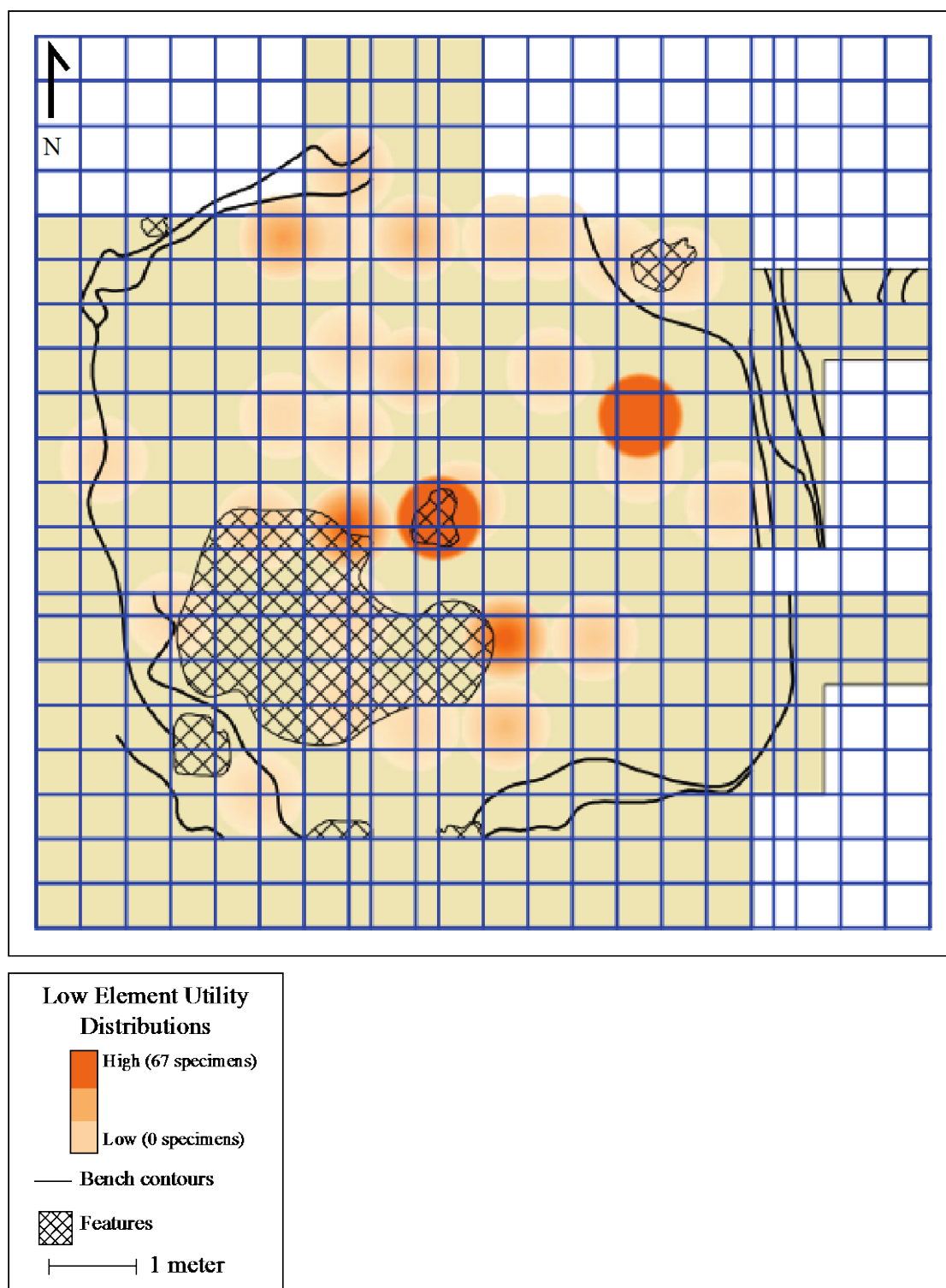


Figure B.60. Fauna Distribution by Element Utility – Low.

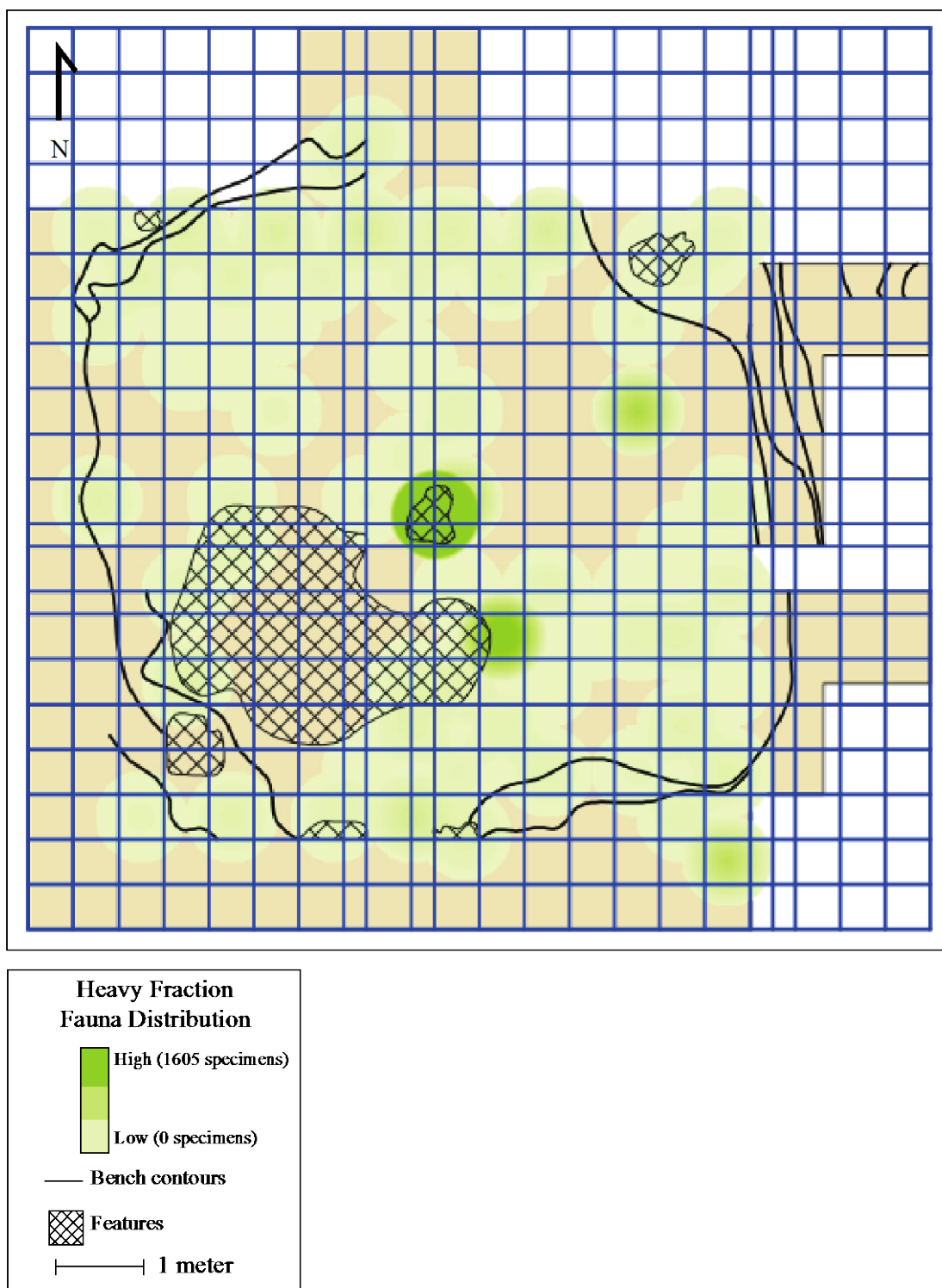


Figure B.61. Heavy Fraction Fauna Distribution.

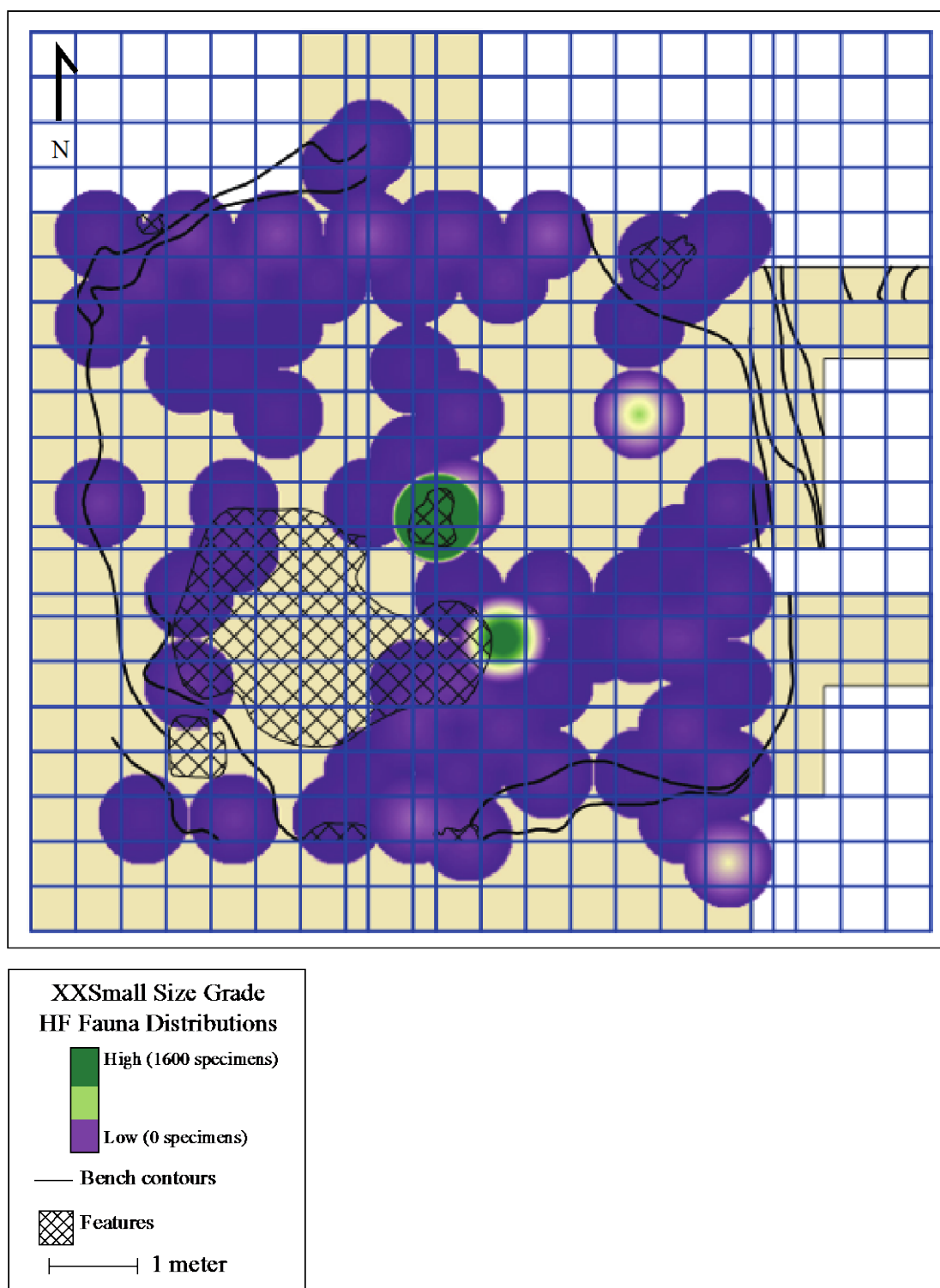


Figure B.62. Heavy Fraction Fauna Distribution by Size Grade Xxsmall.

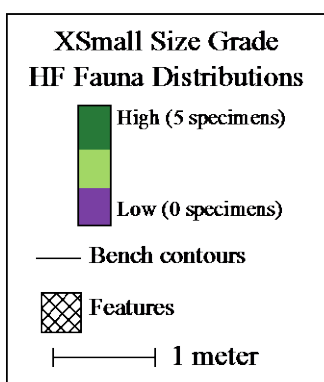
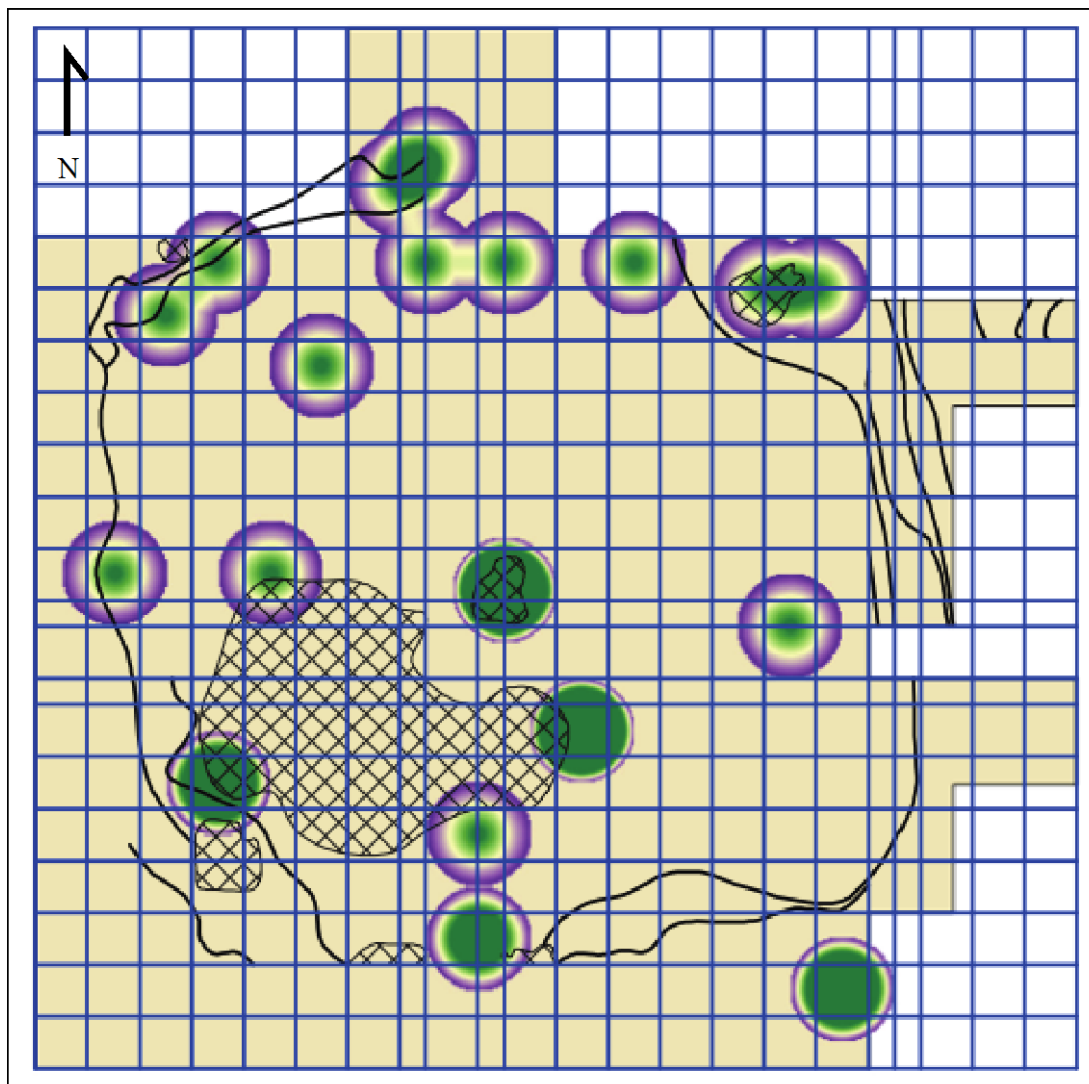


Figure B.63. Heavy Fraction Fauna Distribution by Size Grade Xsmall.

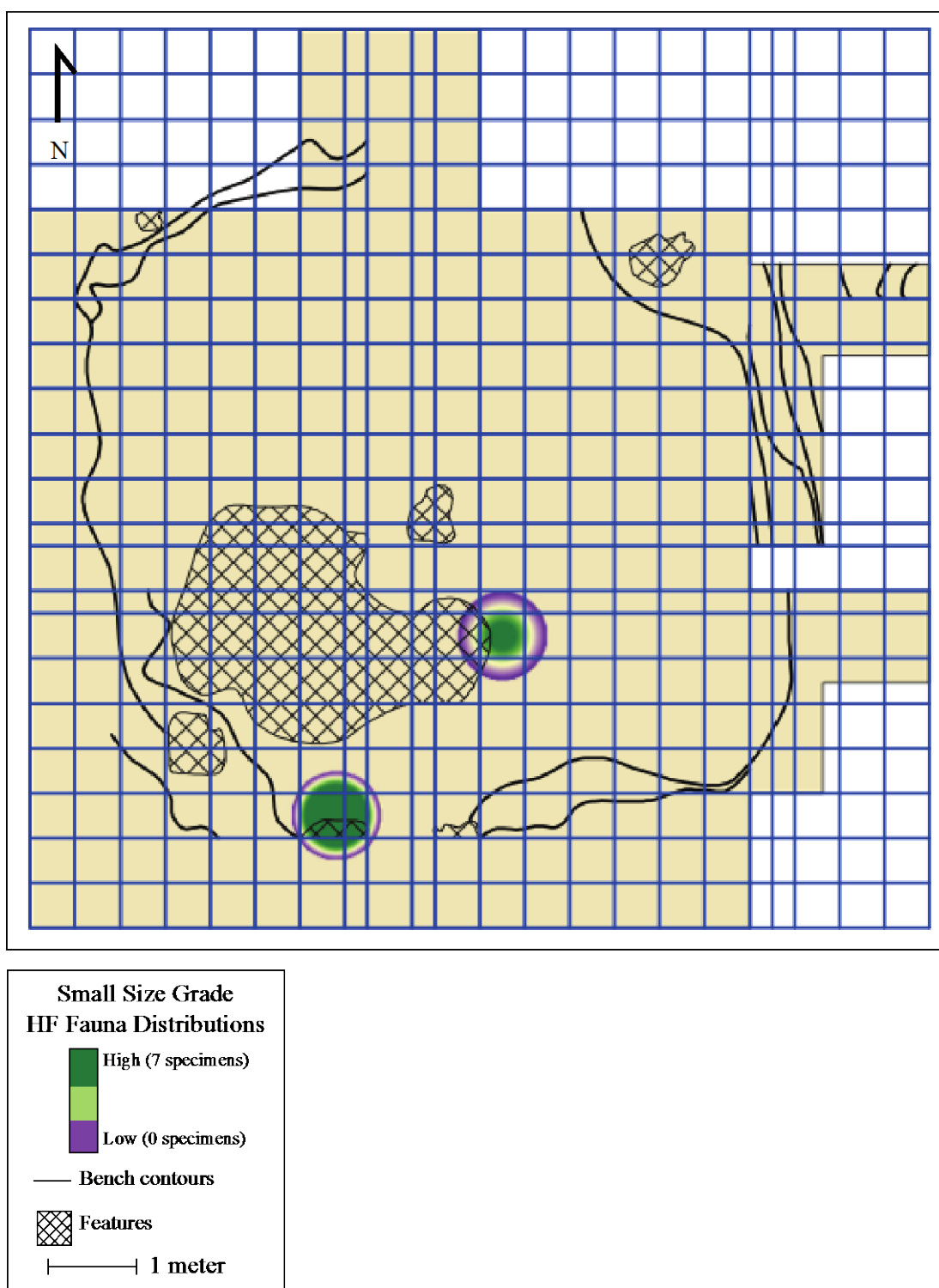


Figure B.64. Heavy Fraction Fauna Distribution by Size Grade Small.

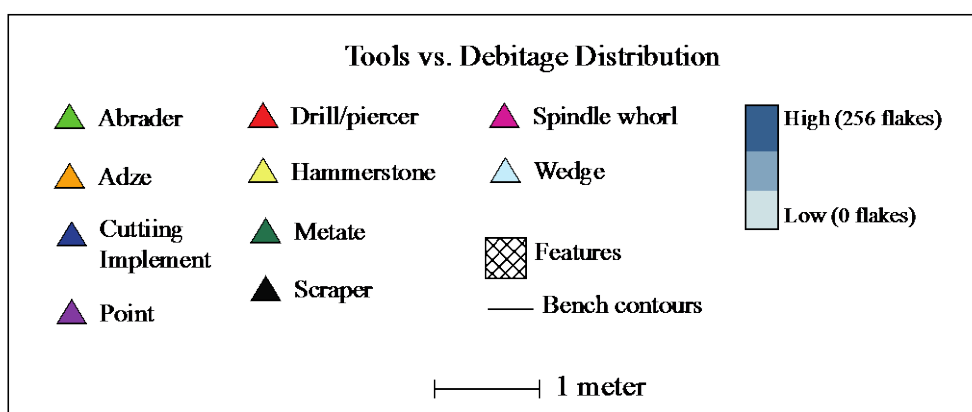
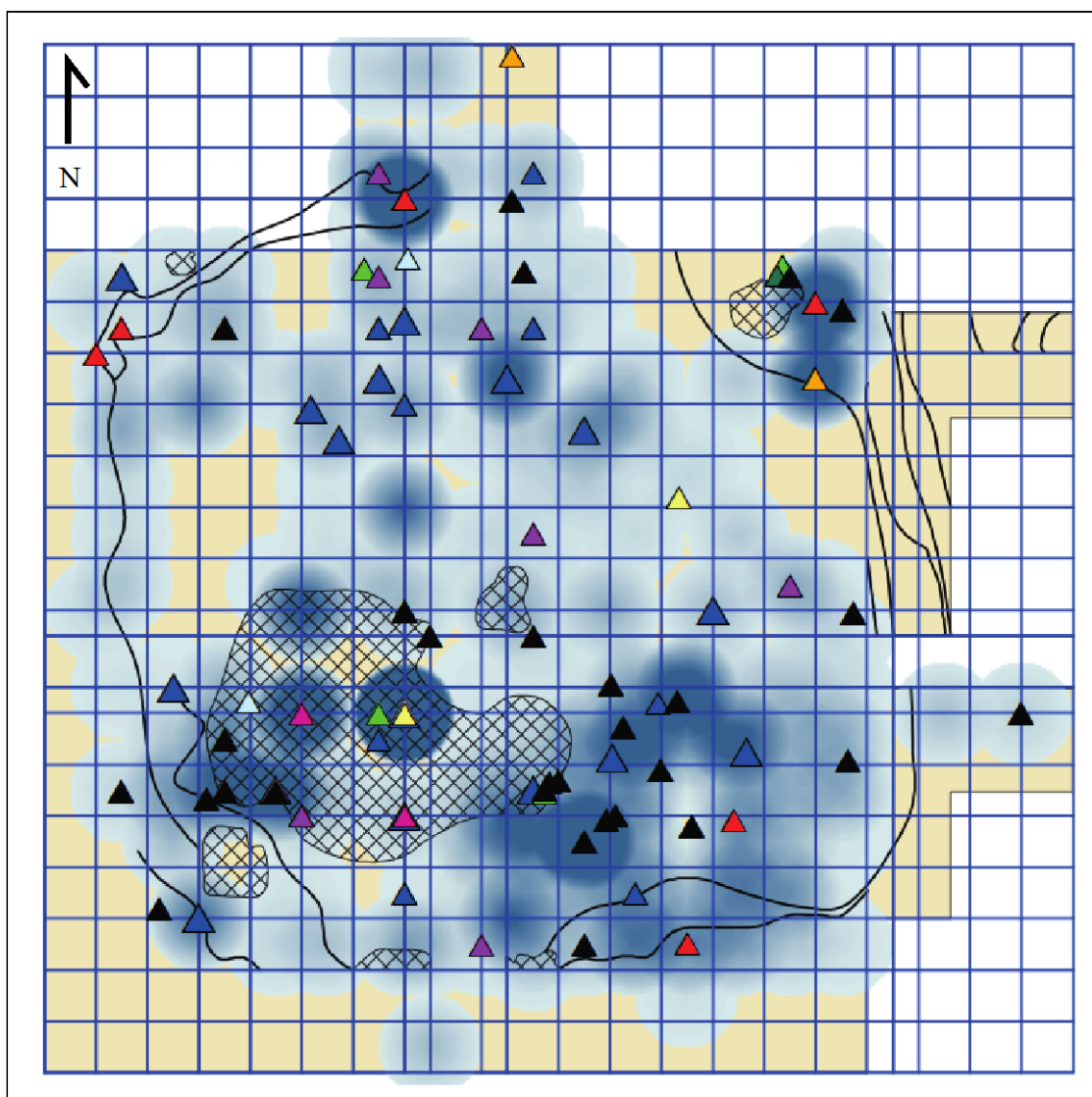


Figure B.65. Tools vs. Debitage Distribution.

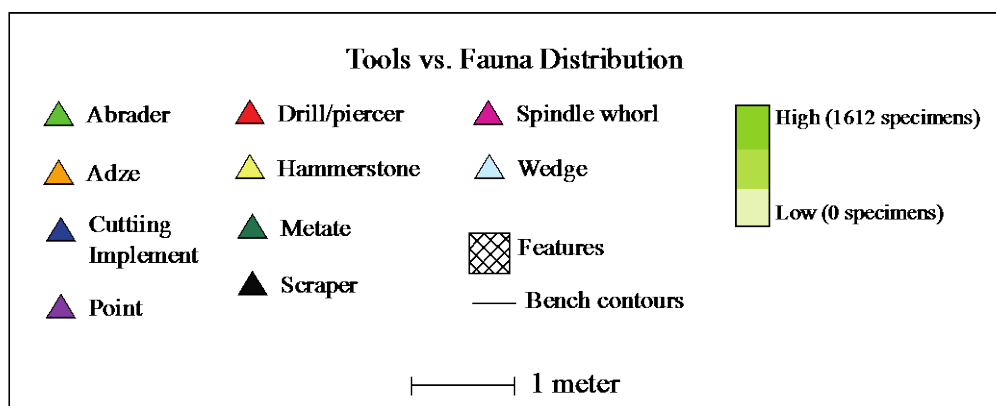
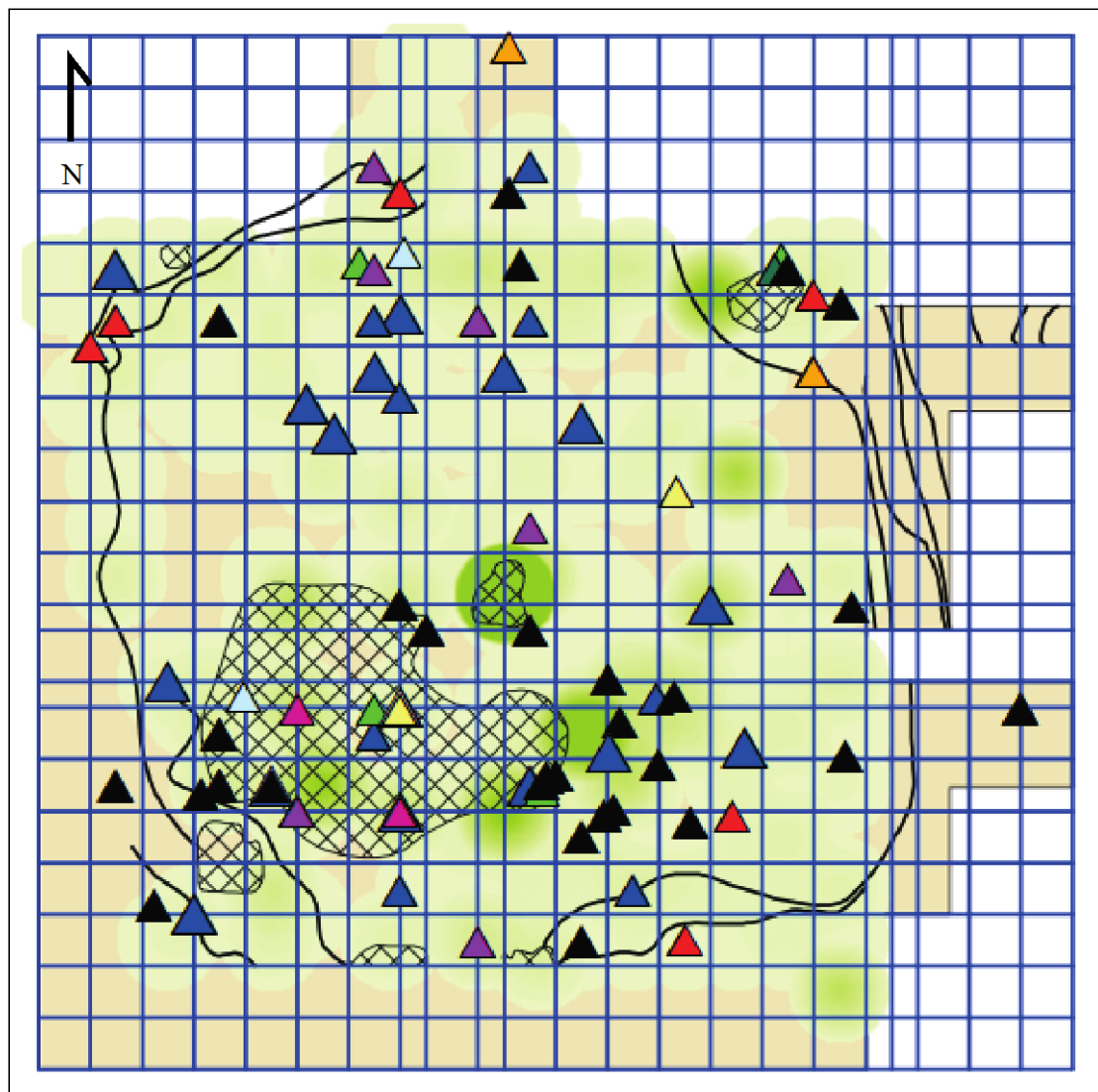


Figure B.66. Tools vs. Fauna Distribution.

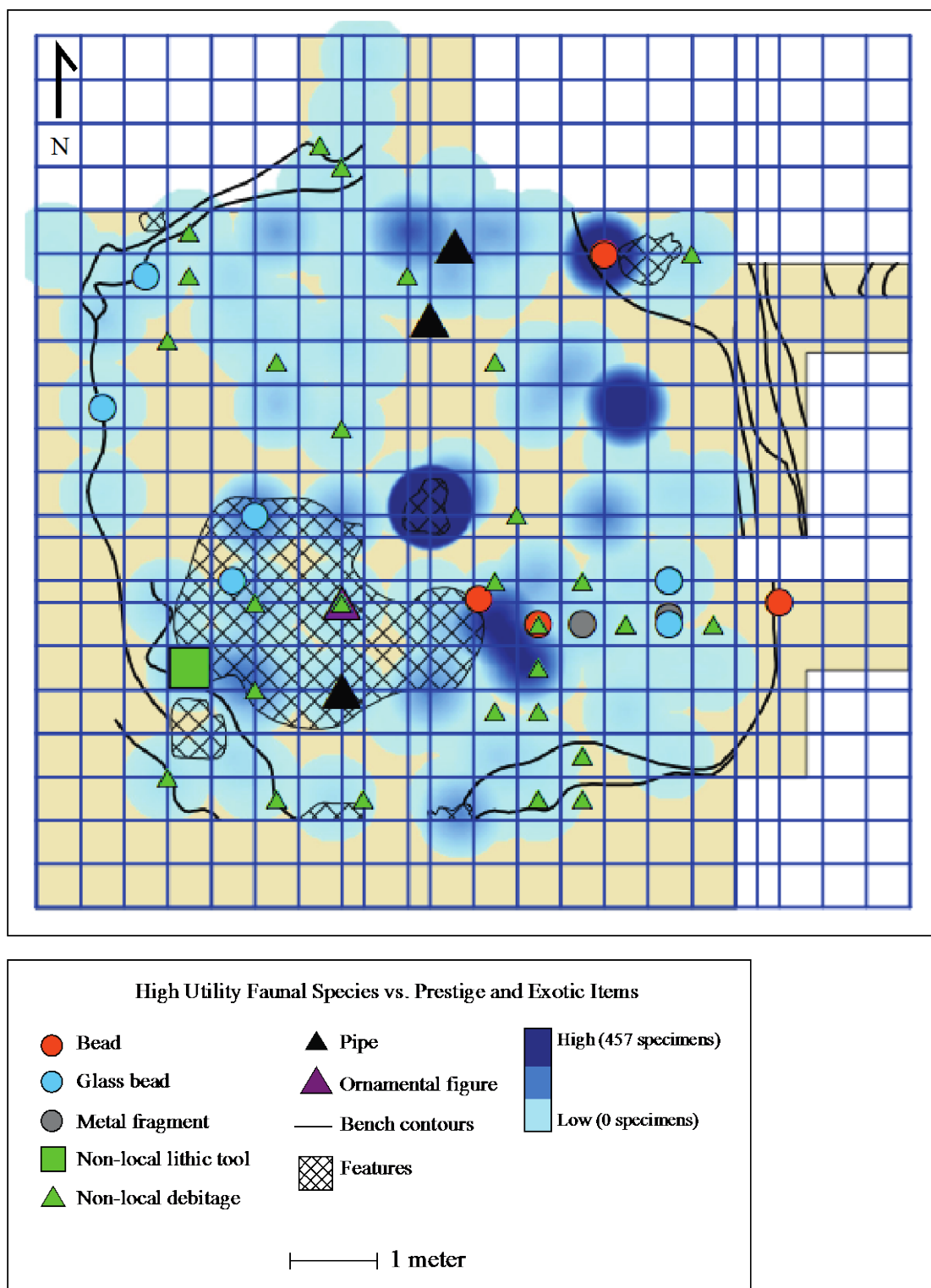


Figure B.67. High Utility Faunal Species vs. Prestige Items.

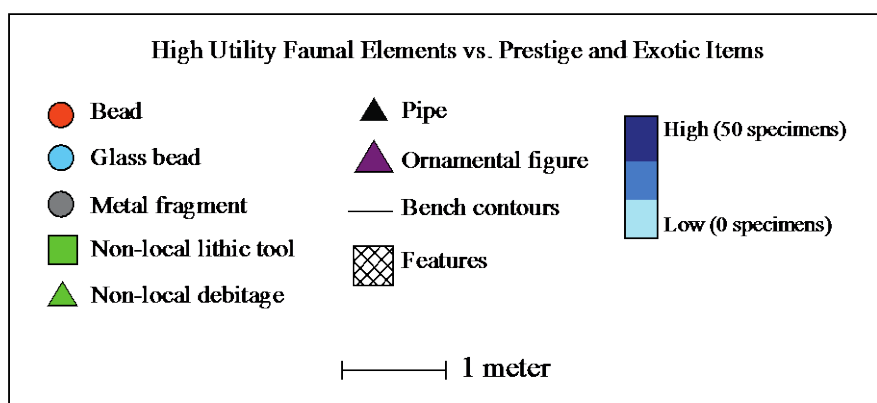
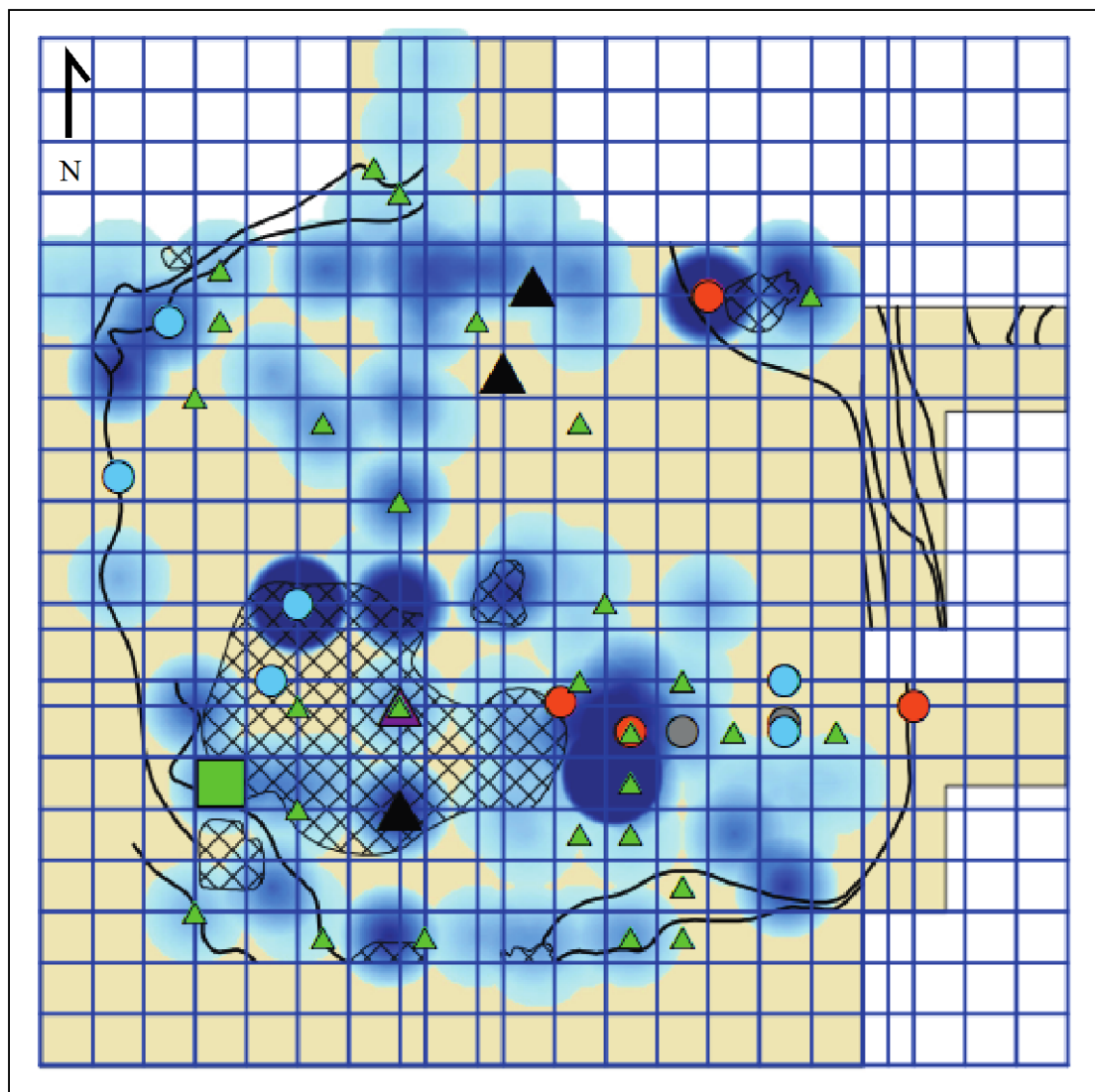


Figure B.68. High Utility Faunal Elements vs. Prestige Items.

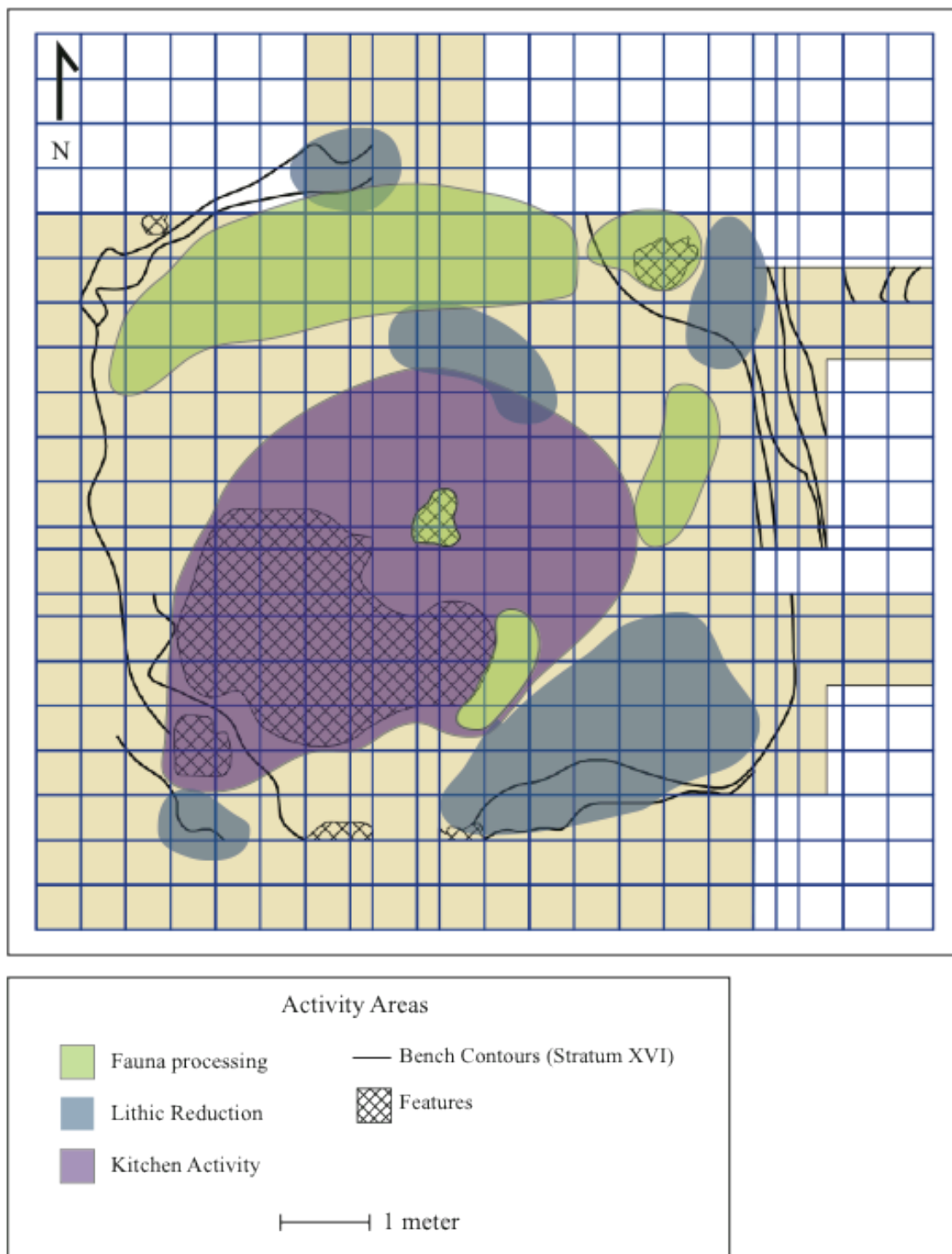


Figure B.69. Activity Areas

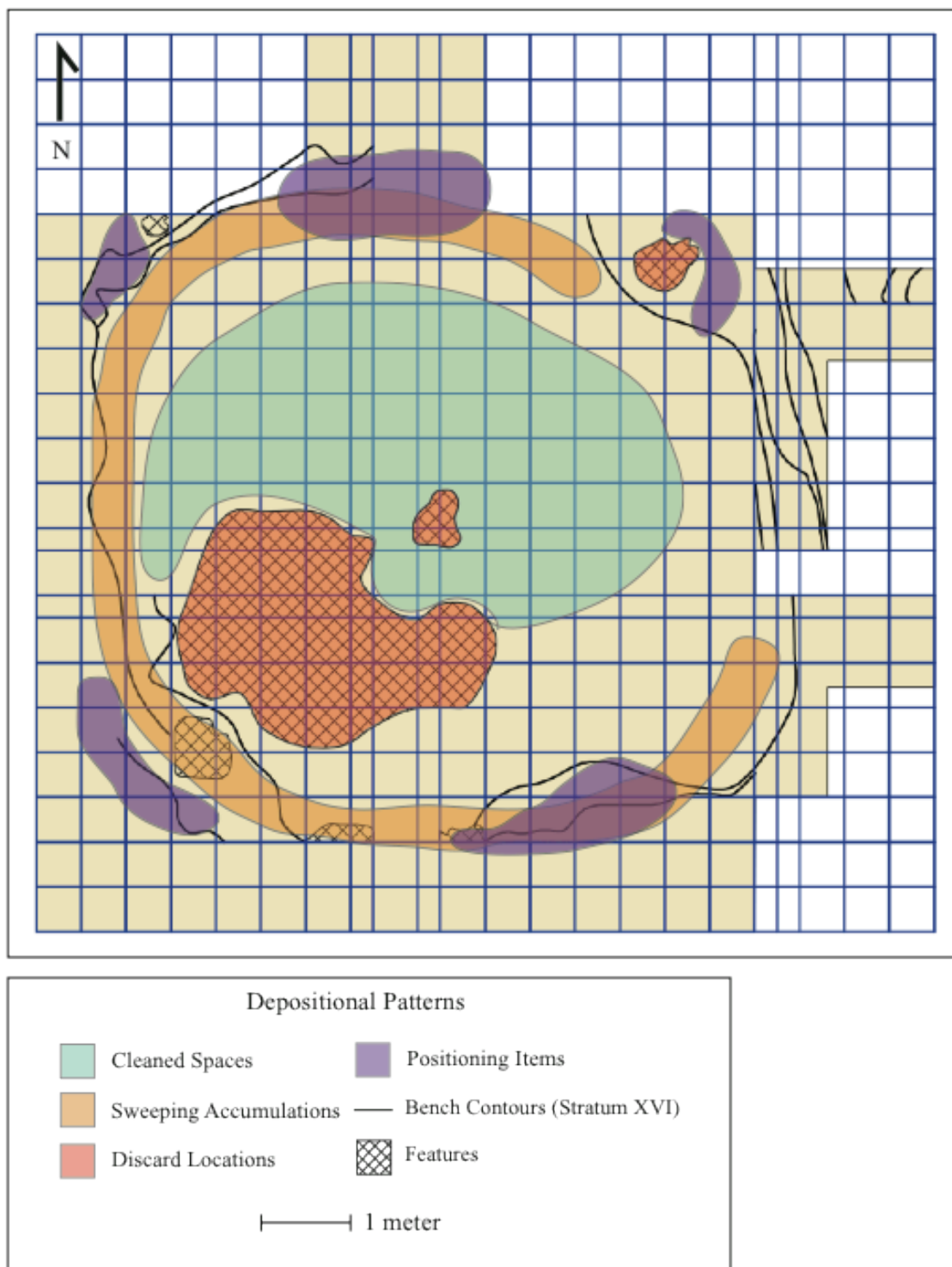


Figure B.70. Depositional Patterns